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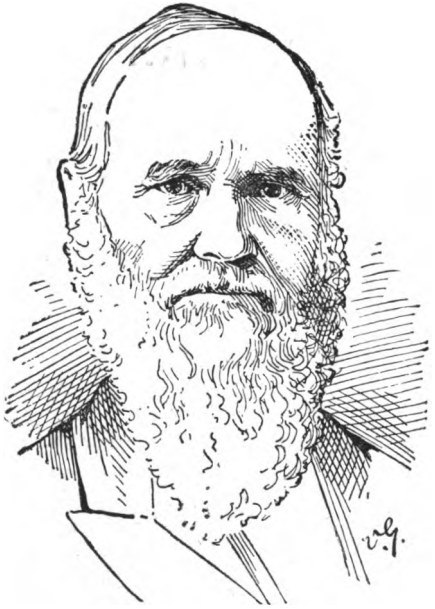

T. T. LYON, President Michigan Horticultural Society.

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TRANSACTIONS

OF THE

WISCONSIN

STATE HORTICULTURAL SOCIETY

INCLUDING

ADDRESSES AND PAPERS PRESENTED, AND PROCEEDINGS AT THE SUMMER, AUTUMN AND WINTER MEETINGS, FOR THE YEAR 1885-6.

VOL. XVI.

H. C. ADAMS, SECRETARY.

MADISON, WISCONSIN:
DEMOCRAT PRINTING COMPANY, STATE PRINTERS.
1886.

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LETTER OF TRANSMITTAL.

To His Excellency, JEREMIAH M. RUSK,
Governor of the State of Wisconsin.

SIR: In compliance with law, I have the honor to transmit to you the sixteenth volume of the transactions of the State Horticultural Society, including a full statement of the receipts and expenditures of the Society, together with a portion of the papers read at its meetings in 1885–6, and such other matter as has been deemed likely to promote the horticultural interests of the state.

Very respectfully,

H. C. ADAMS,
Secretary.

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OFFICERS FOR 1886.

PRESIDENT,

J. M. SMITH, - - - - - - - - - - GREEN BAY.

VICE-PRESIDENT,

B. F. ADAMS, - - - - - - - - - - MADISON.

RECORDING SECRETARY.

H. C. ADAMS, - - - - - - - - - - MADISON.

CORRESPONDING SECRETARY,

B. S. HOXIE, - - - - - - - - - - EVANSVILLE.

TREASURER,

M. ANDERSON, - - - - - - - - - - PINE BLUFF.

SUPERINTENDENT,

H. F. MARSH, - - - - - - - - - - SUN PRAIRIE.

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COMMITTEES.

EXECUTIVE COMMITTEE.

Ex-Officio.

THE ABOVE OFFICERS,

By Election.

Dist.	*Dist.*
1. S. HUNT, Evansville.	5. HENRY FLOYD, Berlin.
2. G. C. HILL. Rosendale.	6. DANIEL HUNTLEY, Appleton.
3. B. F. ADAMS, Madison.	7. WM. FOOTE, North Adams
4. J. B. STICKNEY, Wauwatosa.	8. E. G. PARTRIDGE, Warren.

9. WM. SPRINGER, Fremont.

COMMITTEE ON NEW FRUITS.

A. G. TUTTLE, Baraboo. WM SPRINGER, Fremont.
J. P. ROE, Oshkosh.

COMMITTEE OF OBSERVATION.

Dist.	*Dist.*
1. G. P. PEFFER, Pewaukee.	8. WM. SPRINGER, Fremont.
2. N. N. PALMER, Brodhead.	9. HENRY ISABEL, Fremont.
3. G. H. ROBBINS, Platteville.	10. ISAAC CLARK, Galesville.
4. MRS. IDA TILSON, West Salem.	11. ——— ———, ———.
5. WM. TOOLE, North Freedom.	12. A. C. FISH, Bloomer.
6. A. D. BARNES, Campbellsport.	13. H. BARNES, Florence.
7. JOHN SMITH, Depere.	14. MRS. H. C. VAUGHN, Ashland.

COMMITTEE ON NOMENCLATURE.

J. C. PLUMB, Milton. G. P. PEFFER, Pewaukee.
H. FLOYD, Berlin.

FINANCE COMMITTEE.

B. F. ADAMS, Madison. D. T. PILGRIM, Wauwatosa.
A. J. PHILLIPS, West Salem.

COMMITTEE ON HORTICULTURAL EXPERIMENT STATION.

A. L. HATCH, Ithica. H. C. ADAMS, Madison.
B. S. HOXIF, Evansville.

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MEMBERS, 1886.

Adam, John, Markesan.
Adams, B. F., Madison.
Adams, H. C., Madison,
Alcott, Wm., Brodhead.
Aldin, Isaac C., Weyauwega.
Anderson, Matt., Pine Bluff.
Anderson, Andrew, Neenah.
Arnold, A. A., Galesvelle.
Balch, A. V., Weyauwega.
Balsley, A. W., Weyauwega.
Barnes, A. D., Campbellsport.
Barter, Sam'l, Markesan.
Baxter, John, Weyauwega.
Baumbach, Wm. von, Wauwatosa.
Bennett, A. S., Weyauwega.
Brown, J. M., Fremont.
Bostwick, J. M., Janesville.
Callender, Robert, Fremont.
Campbell, Henry, Evansville.
Campbell, Mrs V. H., Evansville.
Chaplin, F. H. Rutland.
Churchill, Chas., Waupaca.
Chesley, Israel, ———.
Coe & Converse, Ft. Atkinson.
Cole, W. H., Brodhead.
Crane, Wilder, Weyauwega.
Daniels, E. W., Auroraville.
Daugherty, Wm. F., Preble.
DeForest, O. L., Janesville.
Dibble, G. W., Evansville.
Dickerson, H. J., Appleton.
Dore, J. S., Neillsville.
Eaton, C. F., Fremont.
Emerson, M. E., Door Creek.
Fenelon, C. M., Weyauwega.
Field, S. F., East Troy.
Floyd, H., Berlin.
Fox, Wm., Baraboo.
Freeborn, S. I., Ithaca.
Gibson, H., Lind.
Gill, Wm., Dayton.
Goss, B. F., Pewaukee.
Graves, S. W., Brooklyn.
Greenman, H. C., Dodge Center, Min.
Hacker, T. L., Madison.
Haight, Nicholas Syene.
Hamilton, C. H., Ripon.
Hanchett, Mark, Footville.
Hatch, A. L., Ithaca
Hatch, C. A., Richland Center.
Hendricks, Wm. S., Campbellsport.
Helms, James, Janesville.
Heimstreet, E. B., Janesville.
Hill, Geo. C., Rosendale.
Hirschinger, Chas., Baraboo.
Holmes, G. W., Fremont.
Holt, M. A., Madison.
Howie, John, Waunakee.
Hoxie, B. S., Evansville.
Hubbard, R. M., Weyauwega.
Hubbard, Mrs. R. M., Weyauwega
Hunt, Samuel, Evansville.
Huntley, D., Appleton.
Huntley, Mrs. D., Appleton.
Innis, W. T., West Rosendale.
Jeffery, Geo., 630 Chestnut St., Milwaukee.
Jewett, Z. K , Sparta.
Keeney, Miss, Wewauwega.
Kellogg, Emily L., Janesville.
Kindsman, C., Fremont.
King, Edmund, Whitewater.
Lawrence, F. S., Janesville.
Le Roy, J. H., De Pere.
Lewis, James, Oshkosh.
Libby, F. D., Madison.
Louden, F. W., Janesville.
Mahon, John, Preble.
McDonald, D., Verona.
Mack, John, Weyauwega.
Marsh, H. F., Sun Prairie.
Masters, Wm., Weyauwega.
Mathews, James, Weyauwega.
McWhinney, Jas. Lind.
Mills, Simeon, Madison.
Miner, Cyrus, Janesville.
Morrison, W. H., Madison.
Newton, Miss M. E., De Pere.
Nœhle, Theodore, Green Bay.
Olds, B. B., Clinton.
Palmer, N. N., Brodhead.
Pammel, L. H., La Crosse.
Parfrey, A. C., Richland Center.
Parker, Col. —., Lind.
Partridge, E. G., Warren.
Peffer, Geo. P., Pewaukee.
Peffer, Miss Kate, Pewaukee.
Philips, A. J., Blunt, Dak.
Phœnix, F. K., Delavan.
Phœnix, Frank, Delavan.
Pilgrim, D. T., West Granville (Express office, Milwaukee).
Plumb, J. C. Milton.
Potter, C. W., Mauston.
Potter, Mrs. M. E., Weyauwega.
Radley, Mrs., A., Lind.
Ried, Wm., North Prairie.
Reid, Wm. Jr., North Prairie.

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Reynolds, Werden, Green Bay.
Rich, O. A., Weyauwega.
Robbins, G. H., Platteville.
Roe, Jas., Oshkosh.
Scheisser, Paul, Fremont.
Scribner, Joseph, Rosendale.
Seymour, A. B., Madison.
Seymour, A. N., Mazomanie.
Smith, D. P., Janesville.
Smith, J. B., Clinton.
Smith, Albert, Weyauwega.
Smith, Alfred, Madison.
Smith, J. M., Green Bay.
Spencer, R. C., Milwaukee.
Spindler, Henry, Fremont.
Springer, Wm., Fremont.
Spring r, John, Clinton.
Steiger, Jacob, Fremont.
Stickney, J. S., Wauwatosa.
Stone, I. N., Ft. Atkinson.
Suydam, J. V., Green Bay.
Tarrant, Henry, Janesville.
Thompson, H. M., St. Francis.
Toole, Wm., North Freedom.
Trelease, Wm., St. Louis, Mo.
True, J. M., Baraboo.
Tuttle, A. G., Barboo.
Vandervelde, J. A., 31 Morrison St., Grand Rapids, Mich.
Vaughan, J. C., Chicago, Ill., 42 La Salle St.
Wakefield, J., Fremont.
Warren, A. A., Green Bay.
Wilson, R. D., Platteville.
West, J. R., Evansville.
Wilcox, E., Trempealeau.
Williams, Daniel, Summit.
Wilson, Wm., Weyauwega.
Willis, G. M., Clinton.
Witt, Luther, Plymouth.
Wood, J. W., Baraboo.
Woods, Wm., Weyauwega.
Wrightman, E. W., Weyauwega.

HONORARY MEMBERS.

LIFE.

Dr. Joseph Hobbins, F. C. S., Corresponding Member Royal Hort. Soc., etc., ex-President, Madison.
O. S. Willey, ex-Recording Secretary
Wm. Trelease, ex-Recording Secretary, St. Louis.
Geo J. Kellogg, Janesville.
F. W. Case, ex-Recording Secretary, Madison.
Peter M. Gideon, Excelsior, Minn.
B. F. Adams, Madison.
T. K. Phœnix, Delavan.

ANNUAL.

J. S. Harris, La Crescent, Minn.
Mrs. Ida E. Tilson, West Salem.
C. G. Patten, Charles City, Iowa.
D. M. Watrous, Iowa.
J. V. Cotta, Lannock, Ill.
Prof. T. J. Burrill, Champaign, Ill.
H. E. Van Diemon, Geneva, Ill.

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FRUIT LIST.

APPLES.*

Seven varieties best adapted to Wisconsin — Hardiness, Productiveness and Quality taken into consideration — Duchess, Wealthy, Fameuse, Tallman Sweet, Wolf River, McMahan's White, Yellow Transparent.

Additional list for special locations — Tetofski, Red Astrachan, St. Lawrence, Fall Orange, Fall Spitzenberg, Alexander, Utter, Westfield Seek-No-Further, Willow Twig, Golden Russet, Walbridge, Orange Winter, Plumb's Cider, Pewaukee.

For trial on sandy soil — Duchess, Fall Spitzenberg.

CRAB APPLES.

For general cultivation — Whitney's No. 20, Gibb, Hyslop, Sweet Russet Transcendent.

STRAWBERRIES.

For general cultivation — Wilson, Crescent, Downing, Windsor Chief, (Pistillate) and Manchester (Pistillate).

Special list for light soils — Crescent, Wilson, Downer, Manchester (Pistillate).

GRAPES.

For general cultivation — Moore's Early, Worden, Concord, Delaware Brighton.

For frosty and otherwise unfavorable locations — Janesville, Champion.

---

* NOTE.— The question of adaptation of varieties is one so largely dependent upon local conditions of soil, elevation and aspect, that a general list will not answer fully the wants of every planter, and at best can only be a general guide in the selection of varieties.

For more specific directions, the following rules and lists are furnished by the committee chosen for this purpose:

1. Locations comparatively elevated and well drained, with a cool northern aspect and fine gravelly clay soil, not very rich, may extend the general list named above to an indefinite extent, with fair prospect of success in southern and eastern districts of the state. But for warm, sheltered location and rich soils, which induce a great growth, no section of our state can safely plant other than those varieties known to be extremely hardy.

2. The best guide in the selection of varieties is for each to plant largely of such varieties as are found successful in locations similar to that each must plant upon. For all unfavorable locations, and extreme northern districts, only the most hardy, well tried apples of the Russian or Siberian types should be chosen for general planting.

3. In the extreme northern districts, only the crown of the hills should be chosen for the orchard, with a firm soil and porous subsoil, and if these materials are wanting naturally, they should be supplied artificially.

For opinions on the varieties recommended, see transactions of the winter meeting.

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BLACK RASPBERRIES.

For general cultivation — Gregg, Ohio, Souhegan, Tyler.

RED RASPBERRIES.

For general cultivation — Cuthbert, Turner, Brandywine.
For trial — Shaffer's Colossal.

BLACKBERRIES.

For general cultivation — Snyder, Stone's Hardy, Ancient Briton. (Winter protection is recommended for all.)
For trial — Taylor, Bartel's Dewberry.

PEARS.

Most likely to succeed — Flemish Beauty.
For trial in the lake shore regions — Ananas d'Été, Early Bergamot, Bartlett, Onondaga (*Swan's Orange*), Seckel, Winter, Nélis, Clapp's Favorite, Beurré d'Anjou, Doyenné d'Été.

PLUMBS.

For general cultivation — De Soto.
For special localities — Lombard, Imperial Gage, Yellow Gage (*Magnum Bonum*), Eldridge, Duane's Purple.
For trial — Cheney (on recommendation of J. S. Harris).

CHERRIES.

For general cultivation — Kentish (*Early Richmond*), Late Kentish, Morello.

CURRANTS.

Red Dutch, White Grape, Victoria.

GOOSEBERRIES.

Houghton, Downing, American, Chester.

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TREE AND SHRUB LIST.

EVERGREENS.

For general culture — Norway Spruce (*Abies excelsa*), White Pine (*Pinus strobus*), Arbor Vitæ (*Thuju occidentalis*), Scotch Pine (*Pinus Sylvestris*), Balsam Fir (*Abies balsamea*), White Spruce (*Abies Alba*).

For ornamental planting — Austrian Pine (*Pinus austriaca*), Red or Norway Pine (*Pinus resinosa*), Hemlock (*Abies canadensis*), Siberian Arbor Vitæ (*Thuja orientalis*), Red Cedar (*Juniperus virginiana*), Dwarf Pine (*Pinus montana*).

For timber — White Pine (*Pinus strobus*).

For live fence post — Norway Spruce (*Abies excelsa*).

DECIDUOUS PLANTS.

For timber — White Ash (*Fraxinus americana*), European Larch (*Larix europaea*).

Nut-bearing trees — Hickory (*Carya alba* and *C. sulcata*), Black Walnut (*Juglans nigra*), Butternut (*Juglans cinerea*).

Street shade trees — White Elm (*Ulmus americana*), Hard Maple (*Acer saccharinum*), Basswood or Linden (*Tilia americana*), Hackberry (*Celtis occidentalis*).

Trees for lawn (in orded named — Weeping Cut-leaved Birch (*Betula alba*, var.), Linden (*Tilia americana*), Hackberry (*Celtis occidentalis*), Green Ash (*Fraxinus viridis*), European Mountain Ash (*Pyrus aucuparia*), Oak-leaved Mountain Ash (*Pyrus aucaparia*, var.), European Larch (*Larix europaea*), American Mountain Ash (*Pyrus americana*), Horse Chestnut (*Aesculus hippocastanum*), Wisconsin Weeping Willow (*Salix* ————), New American Weeping Willow (*Salix* ————), Weeping Golden-barked Ash (————————), Weeping Mountain Ash (*Pyrus aucuparia*, var.), Weeping Poplar (*Populus tremula*, var.).

Shrubs for lawn (in order named) — Snowball (*Viburnum opulus*), *Hydrangea grandiflora*, Syringa (*Philadelphus coronaria*), *Deutzia*, Weigelia (*Diervilla rosea*), Upright Honeysuckles (*Lonicera tatarica*, etc.), Flowering Quince (*Pyrus japonica*), Flowering Almond (*Amygdalus nanus*), Spiraeas, Strawberry Bush (*Euonymus americanus*), Fringe or Smoke Tree (*Rhus cotinus*), Purple-leaved Barberry (*Berberis vulgaris*, var.), Lilac, White and Purple (*Syringa vulgaris*), Persian Lilac (*Syringa persica*), Black Alber (*Ilex verticillata*).

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Climbers — American Ivy (*Ampelopsis quinquefolia*), Scarlet Honeysuckle (*Lonicera sempervirens*), Fragrant Honeysuckle (*Lonicera caprifolium*), *Clematis jackmanni*, Virgin's Bower (*Clematis virginiana*).

ROSES (with protection).

Climbers — Queen of the Prairie, Gem of the Prairie, Baltimore Belle.

Moss roses — Princess Adelaide, Luxembourg and others.

Hybrid and June roses — Persian, Yellow Harrison, Madame Plantier, General Jacqueminot. La France. General Washington.

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ACT OF REORGANIZATION

OF THE

STATE HORTICULTURAL SOCIETY.

CHAPTER 151, LAWS OF 1879.

SECTION 1. The executive committee of the Wisconsin State Horticultural Society shall hereafter consist of the president, secretary and treasurer of said society, and of one member from each congressional district of the state, said members from the congressional districts to be chosen annually by the county and local horticultural societies in the respective districts.

SECTION 2. The present officers and executive committee of said society shall hold their respective offices until the Tuesday next succeeding the first Monday in February, 1880, and until their successors are appointed.

SECTION 3. It shall be the duty of the said society to aid in the formation and maintenance of county and local horticultural societies, to promote the horticultural interests of the state by the holding of meetings for discussion; by the collection and dissemination of valuable information in regard to the cultivation of fruits, flowers and trees adapted to our soil and climate, and in every proper way to advance the fruit and tree growing interests of the state.

SECTION 4. The annual meeting of the society shall be held on the Tuesday next succeeding the first Monday in February of each year, for the election of its officers, the transaction of general business, and the consideration of questions pertaining to horticulture.

SECTION 5. All vacancies in the offices of said society may be filled by the executive committee; and should there be a failure to elect a member of the executive committee in any district, the vacancy may be filled by a two-thirds vote of the members of the society present at any regularly appointed meeting.

SECTION 6. It shall be the duty of the secretary of said society to make an annual report to the governor of the state of the transactions of the society, including an itemized account of all moneys expended during the year, in addition to such matters as are now specified in the law relating to the same.

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SECTION 7. The number of printed pages of said report shall not exceed three hundred and fifty, and the number of copies shall be limited to three thousand five hundred. In all other respects the publication and distribution of said report shall be in accordance with the provisions of law now in force concerning the same.

SECTION 8. The sum of $600 is hereby appropriated out of any money in the state treasury not otherwise appropriated, to aid the said society in carrying out the provisions of this act; said sum to be paid by the state treasurer upon the order of the president of said society, in such sums and at such times as shall best contribute to the prosperity of the society and the interest it represents.

SECTION 9. This act shall take effect and be in force from and after its passage and publication.

Approved March 1, 1879.

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CONSTITUTION AND BY-LAWS.

As amended February, 1885.

CONSTITUTION.

ARTICLE I. This society shall be known as the Wisconsin State Horticultural Society.

ARTICLE II. Its object shall be the advancement of the art and science of horticulture throughout the state.

ARTICLE III. Its members shall consist of *annual* members, paying an annual fee of one dollar, which shall entitle the wife of such member to the privileges of full membership; of secretaries of local horticultural societies reporting to the state society, who shall be considered members *ex-officio*; of *life* members, paying a fee of ten dollars at one time; of *honorary life* members, who shall be distinguished for merit in horticultural and kindred sciences, or who shall confer any particular benefit upon the society; and *honorary annual* members, who may, by vote, be invited to participate in the proceedings of the society.

ARTICLE IV. Its officers shall consist of a President, Vice-President, Recording Secretary, Corresponding Secretary, Treasurer, Superintendent, and an Executive Board, consisting of the foregoing officers and additional members, one from each congressional district of the state, five of whom shall constitute a quorum at any of its meetings. In addition to the foregoing officers, the presidents of all local horticultural societies reporting to this society shall be deemed honorary members and *ex-officio* vice-presidents of this society. All officers shall be elected by ballot, and shall hold their office for one year thereafter, and until their successors are elected; provided, the additional executive members may be elected by the county or local horticultural societies of their respective districts.

ARTICLE V. The society shall hold its annual meeting for the election of officers, commencing on the first Monday in February. It may also hold a meeting in December of each year, at such place and time as may be decided upon by the society, or the executive committee for the exhibition of fruit and for discussions, and such other meetings for discussions and exhibitions as the executive committee may direct, at such time and place as the executive board shall designate.

ARTICLE VI. This constitution, with the accompanying by-laws, may be amended at any regular meeting, by a two-thirds vote of the members present.

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BY-LAWS.

I. The president shall preside at meetings, and with the advice of the recording secretary, call all meetings of the society, and have general supervision of the affairs of the society, and shall deliver an annual address upon some subject connected with horticulture.

II. The vice-president shall act in the absence or disability of the president, and perform the duties of the chief officer.

III. The secretary shall attend to all the correspondence, shall record the proceedings of the society, preserve all papers belonging to the same, and superintend the publication of its reports. He shall also present a detailed report of the affairs of the society, at its annual meeting. He shall also endeavor to secure reports from the various committees, and from local societies, of the condition and progress of horticulture in the various districts of the state, and report the same to the society. It shall be the duty of the secretary to make an annual report to the governor of the state, of the transactions of the society, according to the provisions of the statutes for state reports.

IV. The treasurer shall keep an account of all moneys belonging to the society, and disburse the same on the written order of the president, countersigned by the secretary, and shall make an annual report of the receipts and disbursements, and furnish the secretary with a copy of the same, on or before the first day of the annual meeting. The treasurer elect shall, before entering upon the discharge of the duties of his office, give good and sufficient bonds, for the faithful performance of his duties, subject to the approval of the executive committee.

V. The executive board may, subject to the approval of the society, manage all its affairs and fill vacancies in the board of officers; three of their number, as designated by the president, shall constitute a finance committee;

VI. It shall be the duty of the finance committee to settle with the treasurer, and to examine and report upon all the bills or claims against the society which may have been presented and referred to them.

VII. The standing committees of this society shall be as follows: 1st, Committee on Finance, consisting of three members; 2d, Committee on Nomenclature and New Fruits, consisting of three members; 3d, Committee on Observation, as now provided. Said committees to be appointed annually by the executive committee of the society.

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LAWS RELATING TO THE SOCIETY.

Chapter 151, *Laws of* 1879.

SECTION 6. It shall be the duty of the secretary of said society to make an annual report to the governor of the state of the transactions of the society, including an itemized account of the moneys expended during the year, in addition to such matters as are now specified in the law relating to the same.

SECTION 7. The number of printed pages of said report shall not exceed three hundred and fifty, and the number of copies shall be limited to three thousand five hundred. In all other respects, the publication and distribution of said report shall be in accordance with the provisions of the law now in force concerning the same.—[*Revised Statutes*, 1878.]

Chapter 320, *Laws of* 1883.

SECTION 7. There shall be printed annually by the state printer, and on the order of the commissioners of public printing, the following documents. * * * * * * * * * *

2. Twelve thousand copies of the transactions of the Wisconsin State Horticultural Society, together with such abstracts of reports of county and other horticultural societies, and such other matters pertaining to fruit growing and other horticultural interests of the state as shall be deemed important; provided, the number of pages shall not exceed two hundred. * * * * * * * * * *

SECTION 8. Eleven thousand five hundred volumes of said report shall be bound in cloth, uniform in style with volumes previously published, each volume to contain one copy of each of the reports designated in the preceding section, and shall be distributed as follows: Thirty copies to each member of the legislature; one hundred copies to the State Historical Society; twenty-five copies to each county agricultural society and district industrial association which embraces two or more counties and furnishes the State Agricultural Society a report of its proceedings; one hundred copies to the State Horticultural Society; twenty-five copies to each county horticultural society that shall report its organization, with officers elect, and give an abstract of its proceedings for publication in said volume to the secretary of the State Horticultural Society; one hundred copies to the State Dairymen's Association; fifty copies to the State University; five copies to the Wisconsin Humane Society; two copies to each public library in the state; and the remaining copies to the State Agricultural Society for distribution by its secretary.

SECTION 9. Five hundred copies of the transactions of the State Agricultural Society, and five hundred copies of the transactions of the State Horticultural Society, shall be bound singly, in cloth; five hundred copies

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of the transactions of the State Dairymen's Association, and five hundred copies of the report of the department of agriculture of the State University, shall be bound in paper, for the use of these several societies and departments for distribution or exchange.

Chapter 435, *Laws of* 1885.

SECTION 7. 2. Sixteen thousand five hundred copies of the transactions of the Wisconsin State Horticultural Society, together with such abstracts of reports of county and other horticultural societies, and such other matters pertaining to fruit growing and other horticultural interests of the state as shall be deemed important; *provided*, the number of pages shall not exceed three hundred. * * * * * *

SECTION 8. Thirteen thousand volumes of said report shall be bound in cloth, uniform in style with volumes previously published, each volume to contain such part of one copy of each of the reports designated in the preceding section, as the compiler shall select, the size of said joint report not to exceed one thousand pages; and shall be distributed as follows: Thirty copies to each member of the legislature; one hundred copies to the State Historical Society; twenty-five copies to each county agricultural society and district industrial association which embraces two or more counties, and furnishes the State Agricultural Society a report of its proceedings; one hundred copies to the State Horticultural Society; thirty copies to each county horticultural society; two hundred copies to the State Dairymen's Association; one hundred copies to the experiment station of the State University; twenty-five copies to the library of the State University; five copies to the Wisconsin Humane Society. To the governor, lieutenant-governor, secretary of state, state treasurer, attorney general, state superintendent of public instruction, railroad and insurance commissioners twenty-five copies each; to each public library in the state two copies; and the remaining copies to the State Agricultural Society for distribution by its secretary.

SECTION 9. Twenty-five hundred copies of the transactions of the State Horticultural Society shall be bound singly in cloth and one thousand in paper. Twenty-five hundred copies of the State Dairymen's Association shall be bound in cloth and twenty-five hundred in paper, Twenty-five hundred copies of the report of the Agricultural Experiment Station of the State University shall be bound in cloth and twenty-five hundred in paper for the use of these several societies and departments for distribution or exchange.

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CHAPTER 36, LAWS OF 1885.

To appropriate to the Wisconsin State Horticultural Society a sum of money.

SECTION 1. There is hereby appropriated to the Wisconsin State Horticultural Society the sum of two thousand dollars, out of any money in the state treasury not otherwise appropriated. This appropriation is made to cover the years of 1885 and 1886, and shall be paid to said society in two annual equal payments, viz.: in 1885 and 1886.

SECTION 2. This act shall take effect and be in force from and after its passage and publication.

Published April 10, 1885.

LAW RELATING TO TREE BELTS.

Revised Statutes, 1878.

SECTION 1469. Every owner or possessor of five acres of land, or more, who shall successfully grow by planting with forest trees, consisting of the following kinds, or such species thereof as will grow to the height of fifty feet or more, viz.: arbor vitæ, ash, balsam fir, basswood, beech, birch, butternut, cedar, black, cherry, chestnut, coffee tree, cucumber tree, elm, hackberry, hemlock, hickory, larch, locust, maple, oak, pine, spruce, tulip tree and walnut, tree belts in the manner and form prescribed in the next section, shall be entitled to have the land on which such tree belts grow until they shall reach the height of twelve feet, and after they have attained that height to receive an annual bounty of two dollars per acre for each acre so grown.

SECTION 1470. Such tree belts shall be planted on the west or south sides of each tract of land, to be of uniform width through their entire length, contain not less than eight trees, at nearly equi-distance, on each square rod of land, and be at least thirty feet wide for each five acre tract, sixty feet wide for each ten acre tract, and one hundred feet wide for each square forty acre tract, and upon all square tracts of land, upon two sides thereof. All tree belts owned by the same land owner must be planted not to exceed a fourth of a mile apart, and on the west and south sides of every square forty acres, and shall not exceed one-fifth of the entire tract of land on which the same are planted; provided, that when the east and north sides, or either, of any tract of land, is bounded by a public highway, a tree belt one rod wide may be planted next to said highway, although it, with the others on the west and south sides, shall exceed one-fifth of the whole tract; and tree belts may be planted on any other lines within each forty square acres, by permission of the assessor.

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SECTION 1471. The assessor shall, upon the application of the owner thereof, in each year, at the time of assessing the personal property in his district, make a personal examination of all tree belts for which bounty or exemption from taxation is claimed, and ascertain whether they have been planted as required in the preceding section, and are thriftily growing, and if he shall be satisfied thereof, he shall not assess the same for taxation unless the trees therein shall have attained the height of twelve feet, and in that case he shall deliver to the owner a certificate that he is entitled to an annual bounty of two dollars for each acre of such tree belts, stating therein the whole amount of such bounty and giving a description of the entire land of which the tree belts form a part, and the amount of such bounty shall be credited by the treasurer in payment of any taxes assessed on such land as so much cash; but if not so satisfied, the assessor shall assess the land for taxes or refuse to grant any certificate for the bounty, as the case may require; and if, after any certificate for such bounty shall have been issued, the owner of any such tree belts shall suffer the same to die out by want of cultivation or otherwise, or shall cut the same down, or in any other way allow the same to be so thinned out, that in the opinion of the assesor he ought no longer to receive such bounty, he shall give the treasurer written notice thereof, and thereafter no further bounty shall be allowed until such owner shall again receive a certificate therefor.

TO REGULATE THE SALE OF CRANBERRIES.

Chapter 384, *Laws of* 1885.

SECTION 1. The legal and standard cranberry barrel in this state shall be twenty-three and three-quarters inches high, sixteen and one-fourth inches in diameter at the head, and eighteen inches in diameter at the bridge inside measure. Every manufacturer of barrels for cranberries shall stamp or brand his name with the letters W. S. on such barrels to indicate that they are Wisconsin in standard in size. All sales of cranberries in packages less than a barrel shall be by the bushel or quart, struck or level dry measure. A standard bushel crate for cranberries shall be twenty-two inches long, twelve and one-fourth inches wide by seven and one-half inches deep, inside measure.

SECTION 2. Any person who shall in such manner stamp or brand cranberry barrels of a less capacity than is provided in the first section of this act, shall be guilty of a misdemeanor and upon conviction shall be fined in a sum not less than five nor more than twenty-five dollars and costs of suit, and may be committed to jail until such fine and costs are paid.

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Any person selling cranberries in barrels not thus branded, of less capacity than herein provided, shall be liable to the purchaser in damages to three times the amount of such shortage, and all contracts or agreements for the sale of cranberries by the barrel or crate, unless otherwise especially stipulated shall be understood and construed to mean legal standard barrels or crates.

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REPORT

OF THE

SUMMER CONVENTION

OF THE

STATE HORTICULTURAL SOCIETY.

Held in conjunction with the Waupaca County Horticultural Society, at Weyauwega, June 24–5, 1885.

MORNING SESSION.

Wednesday, June 24, 1885.

Late in the forenoon the meeting was called to order by President Smith of the State Horticultural Society. President Smith expressed his hope that there would be a pleasant and profitable convention, although some changes in the programme were necessitated on account of the absence of several persons who were to have presented papers. He then called upon Mr. C. M. Fenelon, President of the Waupaca County Horticultural Society, who responded in a few words of welcome. President Smith suggested that it would be necessary for a committee to get together and arrange the order of business as soon as possible. Mr. Plumb's motion that a committee of three be appointed to see about this matter was carried and a committee consisting of Messrs. Plumb, Springer and Toole was appointed by the President. The committee was instructed to report at the opening of the afternoon session. Prof. Trelease's paper on "Fungi" was called for but he thought it best not to present it at this point.

Then followed an informal discussion on a question raised by President Smith with regard to the occurrence of rust in a patch of strawberries of the Wilson variety on his land.

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The plants had been set out on naturally good land which had been heavily manured for several years. The land was heavily manured again last year and the plants made a tremendous growth. Along in the fall it was noticed that the plants were being attacked by rust. The weather had been rather rainy. The rust kept on until the time of freezing up and this spring it came on again. Where it was expected the crop would be large it is almost a failure. The point that Mr. Smith desired to raise was as to the cause of the rust. He thinks it was caused by the plants being kept wet so much of the time. Mr. Smith's sons think that the ground has been too heavily manured. Mr. Smith left the question before the convention and desired information. Mr. Plumb wished to inquire in what part of the strawberry plants signs of disease or deficiency were first noted. Mr. Smith said that the buds came out in great profusion, but there was too little foliage to properly support the plants. Mr. Plumb then arose and stated that, though he had great respect for the opinion of Mr. Smith, in this case he had a very good opinion of the decision of Mr. Smith's sons. Mr. Plumb saw this experimental patch last fall and raised the query at that time as to whether the crop would not probably fail owing to the very high stimulus. It appeared to him then that the crop was just ready to be permanently injured. Mr. Plumb considered the Wilson a great success on ordinary soil. He thought that the patch under consideration had not received sufficient air owing to its having been hemmed in by high fences. Notwithstanding the plants grew enough last year to produce a great number of fruit buds. Mr. Plumb considers the appearance of the rust this spring as the present cause of the failure of the fruit.

Mr. Adams wished to know if any more fertilizer was applied than had been usually. Mr. Smith stated that thirty or forty loads to the acre were applied last spring and that the ground was very rich before this application. Mr. Adams said that this matter of rust had been increasing in importance for a number of years and he had seen some-

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thing of it ever since he had begun to grow strawberries for the market. He did not attribute the failure to the application of manure for he had noticed occurrences similar to the one reported on land as heavily fertilized as was that of Mr. Smith. Last year, he observed the same thing in his own patch and at that time attributed it to the influence of the wet weather, and does not now believe that excessive fertilization has much to do with it. He has always raised the largest crops on the richest ground and such varieties as the Wilson require very fertile soil. In his opinion rust occurs more frequently on poor soil than on rich ground. Mr. Smith stated that he has always found this rust on his Wilson's and always expects it after picking one large crop and so plows the vines under after gathering such a crop. Mr. Smith wished to know why the rust came on in the fall. Mr. Kellogg thought that the rust had much to do with the failure of the strawberries but believed that it was due to the excessive application of manure, which, as he solemnly averred, Mr. Smith piled on six feet thick.

Professor Trelease said that rust is a disease caused by a fungus. The disease is on the increase. In his opinion Mr. Kellogg was right with regard to the excessive application of manure. A report on this subject, including letters received from various quarters, has been prepared by the Agricultural Experiment Station, at the State University. From this report it is to be seen that the disease attacks the weak plants. The rust is produced often where the ground is excessively manured and where occurring, is on the richest ground. The potatoe rot likewise appears where the plants are making the rankest growth. The plants are stimulated to a point at which their texture is not solid and they are hence open to attack from the disease. Experiments have been made in England and it is known what can be produced both with and without manure. The application of certain kinds of manure often resulted in a decrease rather than an increase of production. A plant needs a variety of food and by too great use of certain fertilizers

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a rank but not strong growth is produced. Mr. Kellogg's statement with regard to Mr. Smith' spreading manure six feet deep, being cautiously received, he repelled the imputation against his "truth and veracity." Mr. Anderson cautioned Mr. Kellogg against establishing such a reputation in Weyauwega as he had elsewhere. In response to Mr. Kellogg's inquiry as to the condition of the soil in the patch under consideration, it was stated by Mr. Smith that the soil, a light loam, was good, and the land had been manured for six years at a rate of from thirty to forty moderate sized loads to the acre and last year fully as much was applied. This manure had many fish mixed with it and was much richer than ordinary stable manure, but, notwithstanding Mr. Kellogg's assertion, was never six feet deep except before spreading it.

Mr. Plumb considered the question of fungi as one vitally important to horticulturists. Professor Trelease and other botanists have done much towards ascertaining exactly what these fungi are, and the people are grateful for the information, but what would touch the interest of the horticulturist much more closely would be the discovery of the conditions which are most favorable to the appearance of rust. How can it be avoided by a natural process of culture? Mr. Plumb then spoke of experiments with the Crescent Seedling on land very similar to that of Mr. Smith. The land being a poor sand, needed manure, and the owner of the land was at first accustomed to use stable manure. This becoming high, commercial fertilizers were made use of, and are now used in connection with the stable manure. Mr. Smith has not made use of commercial fertilizers. The growth of vines on the patch is four times too large. On that account the land requires less manure. The Wilson and Manchester rust on clay land.

Mr. Anderson then said he knew something of the way in which rust acts on farms. He first spoke of the potato rot and said he had avoided it by planting corn and potatoes together. In his opinion the rot was caused by too much sun. In one season he planted an acre of potatoes in

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the ordinary manner and another acre together with corn. The first acre was a failure while the second was a success. Mr. Anderson attributed the failure of the first acre to rains during the summer, followed by hot sun. Last year he followed the same plan, and while his neighbors lost their crop he did not. He plowed the potatoes in on clover ground and plowed them in deeply. As a consequence the potatoes were not scalded. The land had been somewhat manured and a good crop followed. The failure of Mr. Smith's berries, Mr. Anderson did not attribute to the amount of manure applied.

Mr. Toole gave his late experience with potatoes. In his case the only stimulation given the potatoes was thorough cultivation. He thinks that strawberries must have manure. He planted some strawberries of the James Vick variety, and where not touched by the rust they look now like an unbroken mass of plants. The James Vick received no special stimulus, and yet it rusted badly, while no other kind was served in this way. The rust is not as yet attacking any of the fruit stems. Mr. Toole thought that the season had been good and the crop prospects fine.

Mr. Trelease thought that the lesson to be drawn from the question under consideration was, not that strawberries should not be manured, but rather that they should not be manured to excess. Mr. Adams was of the opinion that the nature of the soil had but little to do with the appearance of rust, for he had seen rust on bad as well as on good ground. Professor Trelease stated that reports from strawberry growers themselves, did not agree as to the nature of the soil most conducive to rust. Some growers thought that it was found most frequently on dry soil, while others thought it was usually found on wet ground. Mr. Anderson was of the opinion that clay land will stand a heavier application of manure than will lighter soils. Mr. Toole thought that the idea that rust was the result of great and sudden changes of temperature, was supported by his recent observations with pansies. A heavy storm of a few days since was followed by a slight frost, and since that time the rust has appeared on the pansies, while the rust on the

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strawberries has also increased. Mr. Anderson thought that these sudden changes of temperature injured the circulation of the plant, and thus in some way contributed to the appearance of rust. Prof. Trelease could not agree with Mr. Toole or Mr. Anderson. The rust is due to the occurrence of muggy weather. The "circulation" is not of necessity injured. The muggy weather affords the conditions which are necessary to the production of the fungi. During this weather the fungi make their rankets growth within the plant. The disease may not come out so much during the muggy weather, but is brought out by the sudden change to cold weather. In the case of strawberry rust, the rust is merely a series of dead spots caused by the fungus. In reply to a qustion, Professor Trelease stated, that the muggy weather simply affords the opportunity for the fungus to develop itself.

Mr. Plumb considered the appearance of mildew or rust on plants as due to the checking of growth by a sudden change of the temperature from warm to cold. The success of a plant is dependent upon its vital force, and if through sudden changes of temperature it is not able to digest its food it will become weak. It appeared to Mr. Plumb that the theory held with regard to cholera germs would apply equally as well to the fungi. The theory with regard to cholera germs is that they will not germinate in healthy blood. Mr. Plumb argued from this that other parasitic fungi would not grow on healthy plants. We should keep the plants healthy and thus prevent the existence of fungi.

Prof. Trelease thought that Mr. Plumb's theory was well founded theoretically, but somewhat impracticable. It is of course possible to find perfectly healthy plants, but they are few. We can no more find many healthy plants than we could find many persons who could withstand being infected with cholera.

The discussion was now closed.

The secretary announced that an additional premium of a box of pansy plants for the best display of wild flowers, had been offered by Mr. Toole.

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The committee on order of business was instructed to report promptly at the opening of the afternoon session.

The convention now adjourned to half past one o'clock.

AFTERNOON SESSION.

WEDNESDAY, June 24.

The meeting was called to order by President Smith. The committee appointed reported the order of business for the afternoon. The president announced to the society that he had received a letter from a lawyer in New Orleans who desired to be appointed attorney for the society in the matter of the collection of premiums awarded the society at the New Orleans Exposition. After receiving this letter the president had written to Mr. Holton, the commissioner in charge of the Wisconsin exhibit. Mr. Holton had left New Orleans, and President Smith's letter was replied to by Mr. Merrill, who had been left in charge of the Wisconsin exhibit by Mr. Holton.

The following letter from Mr. Merrill was then read by the secretary:

NEW ORLEANS, June 17, 1885.

HON. J. M. SMITH, Green Bay, Wisconsin.

Dear Sir:— In reply to yours of the 9th inst., addressed to Mr. Holton, I beg leave to say that Mr. Holton left here the 25th ult., leaving me to attend to packing and shipping to Wisconsin our exhibit. I was fortunate in getting all on the cars last week, Wednesday, the 10th inst. In regard to the premiums, I am told by Mr. Nixon, to whom I was referred for information, that the treasury department at Washington have called on the board of management to forward a full list of the names of those to whom premiums have been awarded, stating post office address and amount of each; and I am assured that such a list will be forwarded to-night, probably by Mr. Burk, Director General, who, I am informed, starts for Washington this evening.

Mr. Burk told me some ten days ago, and a statement to the same effect was published in the *Times-Democrat*, that foreign creditors — those outside of Louisiana — and the payments of debts to the states would absorb all the $335,000 appropriation — that nothing would be left to pay premiums which would have to be regarded as other debts of the concern.

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I do not think it would be wise to give power of attorney to Judson or anyone else, for the present at least.

I leave for home to-night and expect to be in Milwaukee Monday, and perhaps Tuesday of next week. Very truly yours, etc.,

S. T. MERRILL.

Mr. Peffer stated that he had had some correspondence with Mr. Judson concerning the matter of the unpaid premiums, and as nearly as he could find out the management of the Exposition would have to make up the deficiency. The claims had all been handed in but were not yet signed or settled. The president said that he had simply brought the matter up in order to show why the society had not received the premiums awarded on its exhibits. He also stated that it had been found necessary to substitute his own name for that of the society in a number of instances, inasmuch as the society, as such, could compete only for first and second premiums.

Mr. Morrison's paper was now read by the secretary.

HORTICULTURE, AS AN EDUCATOR.

W. H. MORRISON, Elkhorn.

Last October business called me to Chicago, and having some time to spare I visited the Panorama of the Battle of Gettysburg, to see which, is worth an especial visit to the city. In the afternoon, spent sometime on South Water Street, and I verily believe that the wonderful evidence of progress in horticulture, as shown by the fruit gatherd from the North and South; East and West, whose time of ripening represented several months, was as great a marvel and study as the panoramic view of the great battle of the Rebellion. There were the luscious wine-colored Catawbas from beyond the Cumberland. The large amber Agawam, and snowy Marthas from the islands of Lake Erie. The Malaga's from the sunny slopes of the Mediterranean. California was well represented by mammoth clusters of grapes,

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pears, apricots, oranges, lemons, etc. The picture was fascinating, as the specimens from so many localities were perfection itself, and was typical of the high civilization and the magical progress of the horticulture of to-day. How does it compare with the horticulture of our boyhood days? You remember the long list of novelties of vegetable, fruit and flower, and the few really good and meritorious kinds that have been sifted out: the Wilson strawberry, the Concord grape, Champion of England peas, the Lima bean, the Early rose potato; all, stand out like old land marks, and point as epochs the forward march of horticulture.

It would be interesting to review the progress made for twenty-five or thirty years, its experiments, its failures, and its glorious successes; but the great cry of the age is for something practical, something useful. We have the grassy lawns, the laden fruit trees, the hardy flowering shrubs, and the beautiful plants, flowering and ornamental, that adorn and add their refining influence to so many homes.

No study offers so many inducements so attractive, and that nearly all instinctively drift into, from the very love they have for it, as horticulture. How varied the field of information, how much it embraces and how it leads from one thing to another, until the imperfect horticulturist becomes a scholar.

We cultivate a few flowers and invariably the desire is to grow more. The winter months pass quickly and pleasantly, for plans are formed and matured. The many catalogues are thoroughly studied. We find that nearly all of the plants are designated by Latin names, usually indicating some characteristic of the plant, as well as the name of the finder or introducer; in many instances where the acquisition of knowledge will accept of no delay, it will lead to the study of Latin.

The practical horticulturist very soon becomes interested in the study of botany. It has always been a query to me why algebra should be taken and botany left out of the curriculum arranged for our common schools, when ninety per cent. of all the pupils attending them are farmers' sons and daughters.

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A knowledge of botany would explain vegetable life with which the farmer is surrounded and of which he knows so little. He would soon learn to know how plants are influenced by the various agencies of light, heat, air and moisture. It describes their secretions and the nutriment afforded by the soil. It explains the circulation of the sap in the plant, shows how its structure is built up from the salts in solution, sent along its veins to the leaves, where the pure water is evaporated and the thickened sap is returned to form stem, leaf, flower and fruit, and the root itself. I know of no study that pertains so directly to the business of horticulture, or farming.

The horticulturist soon becomes an agricultural chemist. The very nature of his vocation teaches him to distinguish the difference between soils, and the progressive man that is bound to know the whys and wherefores, supplies himself with text books and learns to analyze the soil. How crops grow and feed, and what is necessary to their perfect development. In the same way the best authors on entomology and ornithology will be read and studied.

Horticultural knowledge opens a wide field for intellectual expansion; its votaries become students; the theoretical and the practical go hand in hand, and thus the mind is ever in an attitude of receiving; it reaches forth and absorbs information from every source, expands, grows, becomes fuller and broader.

We usually accomplish that which we seek earnestly for. The mysteries of agriculture with which we are surrounded and that are presented in so many forms, claim a life-long study and will develop the best results: such as happiness and a competence, the best improvement of our opportunities and a better appreciation of the works of the Infinite.

Mr. Plumb opened the discussion on the paper by saying that Mr. Morrison had lately been appointed to hold a series of farmers' meetings throughout the state, the appropriation made for this purpose being sufficiently great to provide

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for a large number of such meetings. Mr. Plumb assured the people of Weyauwega, that if they should be favored with such a meeting they would not only find Mr. Morrison an agreeable and intelligent man but would also find the work done in the meeting of an interesting and profitable character. Mr. Morrison, as was said by Mr. Plumb, is one of the most successful conductors of agricultural societies.

President Smith now read a paper which was well received.

DO WE NEED EXPERIMENTAL STATIONS FOR HORTICULTURAL PURPOSES.

J. M. SMITH, Green Bay.

Ladies and Gentlemen— As I well know that it will be useless for me to attempt to make myself ornamental as some Presidents are supposed to be, it only remains for me to attempt to make myself useful by discussing some practical question. Hence the above question. If I succeed in opening the question for a full and general discussion, it will be about all that I can hope for in the short time that I shall occupy at present. It is well known to the old horticulturists of our state, that when they first came here and commenced the business of the tree, plant, flower, and fruit growing, they very naturally selected such specimens and varieties as did well in nearly the same latitude in the eastern states. This was natural and reasonable; and by so doing, and doing their work well, they had a reasonable right to expect at least a fair amount of success to reward their labors. What was the result? There are those present who perhaps can answer this question better than I. So far as apple growing was concerned, perhaps in the whole history of its cultivation upon this continent, there were few if any more complete failures.

Men with knowledge and experience embarked in the business, and put in both their time and money. It was not their way of doing business to give up at the first set-back they met with. But what should they do? There were no

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guideboards of warning set up, because the road to success was yet unbroken. They had ascertained that there were many varieties of trees that would not answer for the great empire that lay west and north of Lake Michigan. Where were the trees that would furnish us a supply of apples, pears, cherries, plums, etc., to say nothing of the many varieties of small fruit that we need and must have?

The State Horticultural Society was organized at an early day, and its members have worked earnestly, faithfully, and well in the different branches of horticulture.

What has been the result? Let the records of the society tell the story. After some years of trial they have decided that one apple would do for a hardy summer fruit, another one for fall, and another for winter. They are doing reasonably well, and it is to be hoped that they will be truly hardy and valuable. But the first one of our extra severe winters dissipates all these hopes, and leaves the workers to try again.

How many varieties of apples, pears, cherries, and plums have been put into the hardy list, only to be dropped after a few years' trial, can only be told by consulting our readers. Do not understand me as finding fault, or complaining of these many changes. The men who made them were only breaking their way, and I very much doubt if any equal number of men in the northwest could have done any better under the circumstances. They were in reality the pioneers in this business for the whole northwest, and could have the experience of none to aid them because none had ever had the same experience to put upon record.

With regard to the smaller fruits the results have been better, but even here there have been many disastrous failures. How many grapes have we to-day, the Concord excepted, that we dare to recommend as safe and reliable even south of 45 degrees, and but few of us would dare to risk recommending that, in the northern portion of the state. We have many varieties of blackberries, and raspberries, that will do well with winter protection, but not one of them is reasonably safe to trust during such a winter as

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our last one has been, without protection of some kind. In strawberries we have been experimenting for twenty-five years at a rate of many new varieties each year; but I have lately had communications from two different parties who claim to have eight hundred new varieties between them. And yet how many have we that we dare trust in all portions of the state, even with fair cultivation?

It is probable that more money has been thrown away upon this, the queen of berries, than upon all of the other small fruits combined. During the last twenty-five years there have been literally thousands of new varieties admitted, and every effort made to place them before an unsuspecting public; and by the most extravagant stories of their size, quality, and productiveness, induce the ignorant, the confiding, and sometimes those who ought to know better, to invest money, time, etc., only to be disappointed, and vexed at the seller, and disgusted with small fruit growing in general. I honestly believe that in money and time I have spent more than one thousand dollars within the above named time in trying to get something better than the Wilson. Scarcely a year passes that I do not plow under a number of the new varieties, after years of trial, only to repeat the experiment when some new candidates for favor come forward with such marvelous recommendations that it does not seem possible that it can be only a sham and the plant entirely worthless. No one knows better than myself that the Wilson is not a perfect plant, neither is the fruit a perfect berry; yet it is undoubtedly, all things considered, the best that we have, and it is the only one that I ever think of recommending to the amateur.

What is true in my case, is true in the cases of many others all over the state to a greater or less degree, not only in this, but in nearly all of our varieties of fruit.

It is plain that unless some radical change is demanded and insisted upon by the true friends of horticulture, that this state of affairs will continue for an indefinite period of time.

Are you ready to ask what has all this to do with our Agricultural College? Or what that has to do with it? I am sorry

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to say that it has simply nothing at all to do with it, and never will have while confined to its present conditions. But you ask would you destroy our present working institution?

Certainly not; I would lay no rude hands upon it. They are doing some good work there, and let us bid them God speed in that, and encourage them to do much more. But to make the present station a valuable one for experimental horticulture, is simply an impossibility. What then shall be done? Suppose that some first-rate location with a variety of soils had been selected twenty-five years ago, and that it had been put into the hands of some first-class practical horticulturist, with a competent corps of assistants, with instructions to institute a series of practical experiments in testing the different varieties of fruits supposed to be adapted to our soils and climate. In ascertaining what of the new varieties that are constantly being introduced are, or are likely to become valuable. Suppose it had been extended through our entire list of fruits. We will suppose that such a station has been honestly, earnestly and intelligently conducted for twenty-five years. What would be the result? My friend Plumb, who is ever in search of something new and valuable in the line of apples, might go there and examine their list of new and supposed to be valuable trees. He might examine the soil upon which they grew, and consider the location, also the degree of cold to which they have been subjected, and see samples of the fruit, examine the wood upon which it grew, and in many other ways learn sufficient to enable him to form nearly or quite a correct idea of the value of the tree for our state.

My friend Tuttle has been experimenting for years at heavy expense with many varieties of the Russian apple. He is as many of us are, sanguine that among his large list, there are some that will prove very valuable. If this is not the case, he has added another to the long list of experiments that have added much to the knowledge of our people, but at a heavy expense to himself.

If these tests had been made at an experimental station, he could have obtained within a very brief period of time—and at almost no expense — the knowledge that is now cost-

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ing him much time and money to obtain. Suppose I wish to learn something of the probable value of some new variety of strawberries. Instead of spending time and money, let me go and examine the trial beds there, and carefully note the difference existing between such beds and those upon my own grounds, and the different methods of cultivation. I believe that by so doing I could judge very correctly whether or not it would be wise for me to invest in any variety that I should so examine. In fact it is possible that I might so learn of other varieties, that I should be willing to recommend something beside Wilson to my friends. And so on throughout the entire list of fruits, plants, shrubs, flowers, etc., that are adapted to our soil and climate.

This work should not be done for the benefit of J. C. Plumb, A. G. Tuttle and J. M. Smith only, or for the benefit of any set of men, but for all the citizens within the boundaries of the state. I would have all the valuable knowledge obtained by such experiments published and scattered broadcast over the state, and then use every possible means of inducing all to use the knowledge so obtained to benefit themselves and those around them. If there were those who wished to attend such experimental schools, stations, colleges, or whatever name we prefer to call them, of course provision should be made for them. Still the greatest advantage resulting from such a station, would in my opinion, be the carrying the knowledge obtained to the people in their homes. For instance I have no doubt but that Brown county is much better than the average counties of this state for fruit growing. And yet if I could go from this convention home, and say to its citizens honestly and truthfully: Gentlemen, here are three varieties of apples; one for summer, one for fall and early winter, and one for late winter and spring, the fruit beautiful in appearance, fine in quality, and fair in size, the trees are absolutely hardy in our most severe winters, fine growers and good bearers, and need only reasonable care to insure you fine crops and as certain as any crop now grown upon your farms or in your gardens, what think you would be the result? I have no doubt but that such a declaration made by one in whom our

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people could and would trust, would add more than a million of dollars to the value of the county within the next ten years. What is true in Brown county is doubtless true in many other counties of the state.

Gentlemen, I did not intend to occupy much time, and will detain you but a few moments longer. The time has come, in my opinion, when the agriculturists and horticulturists of this state should unite their forces and speak with no uncertain sound. Fortunately the financial condition of our state is such that there can be no doubt of its ability to grant these interests all necessary aid.

Constant and continual progress is the watchword of the age.

We must not lay behind in the race; but unless we are up and doing we surely shall do so.

We must be careful to ask for nothing that is unjust, or unnecessary.

Those of us whose heads are already whitened with age, may not, and probably will not, live to see the work perfected, but we may at least assist in placing the foundations of a system whose influence in the years to come will reach the homes of the humblest citizens of our state, and that influence will be exerted only for good.

Then let us work on. Let us work faithfully, earnestly, honestly, and intelligently; and when we have succeeded in obtaining from the state the recognition that we need, and sooner or later we shall succeed, we must do our share of the work so well that all of our influence will be felt for good and for good only.

Mr. Kellogg thought that the advantage to the state from an experimental station rightly conducted cannot be estimated. Many nurserymen have expended thousands of dollars in testing different kinds of trees, many of which have proved worthless. Berry growers meet with the same difficulties. Last year four new varieties of strawberries were brought out, and of the four, only one kind, the Daniel Boone, has proven of value. Experiments must be made

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with these different varieties, and where they are made by individuals themselves, they necessitate an expenditure of thousands of dollars.

Mr. Kellogg said that to test any variety of a berry, at least five years would be required and the test should be made in at least ten different places. With a central experiment station these experiments could be made at much less outlay of time and money.

Mr. Toole thought that all would like to throw the work of making experiments on other shoulders. There exists a general feeling in favor of a central experimental station, but it is best to settle upon just what is wanted. Is it best to have experimental work carried on at our present station? Would it be best to group all this work together? In Mr. Toole's opinion it would be better to have horticultural work carried on in separate place, for the present place is by no means best adapted for such work. The state of Minnesota does not mass all of its experimental work at one place, but has portions of it carried on by individuals scattered through the state. Could Wisconsin advantageously pursue this plan?

Mr. Plumb stated, that Minnesota was doing but little with the outside experimental stations. Mr. Plumb was asked a question with regard to the mode of procedure of Mr. Gideon of Minnesota, who is making experiments in growing apple trees from seeds. Mr. Gideon takes the seeds of apples indiscriminately and from them hopes to get varieties of trees suited to Minnesota. In Mr. Plumb's opinion, this plan of working would require a long period of time. He thought that Iowa was doing more in this direction than was Minnesota. In Iowa they are importing seeds, scions, cuttings, roots, etc., and planting them in home ground. They are put in the care of different persons throughout the state. The state is divided into five horticultural districts, and the experiments with these seeds, cuttings, etc., are carried on under the supervision of Professor Budd. He puts out the seed, etc., and records his observations. The varieties are tried throughout the state, and the results are open

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to the inspection of all. This plan, it seemed to Mr. Plumb, promises the most important and greatest results of any plan he knows of. In his opinion we need a central experimental station. He considered the frequent tranfer of the superintendent of the station as a great evil. Under such circumstances, the superintendent will care nothing for what has been done; but will look only to retaining his place. He too thought that we should know just what is wanted and he thought that the county societies of the state should meet and agree upon some definite plan. Mr. Huntley rose in defence of Mr. Gideon's manner of producing trees suited to Minnesota; but Mr. Plumb thought, that Mr. Gideon had been greatly favored by providence. Mr. Plumb stated, that in the opinion of one of the best horticulturists of Iowa there are enough good seedlings in the state of Wisconsin to-day to set the state upon its feet pomologically.

Mr. Adams thought, that in reality Mr. Plumb was in favor of Mr. Gideon's plan. He was of the opinion that our most valuable varieties of apples or berries are the results of chance.

At this point in the discussion a motion was made by Mr. Huntley, limiting the time of discussion to five minutes, was carried.

President Smith embraced the opportunity of a break in the discussion, to speak of the many and varied premiums won by the Wolf River Apple (Wisconsin seedling) at the New Orleans Exposition.

Mr. Toole again took up the discussion of the Experii mental Station question. He admitted that the best varieties of fruit were accidentally produced. He thought the horticulturist could much better afford a visit to the central station than he could the expense of making experiments for himself. We should have a more valuable experiment station provided for by more generous appropriations. The men at the head of the station have too little money to do good work. Horticulturists should know just what they want and then call for it.

Mr. Huntley thought that the station was not needed.

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Mr. Daniells made some remarks in praise of Northwestern Greening.

Mr. Pilgrim did not consider the Greening a safe apple to plant in all localities. He thought we should cling to the old standard varieties. Mr. Pilgrim thought it would be a good plan for nurserymen to make out lists of apples which do the best. He gave a list of trees that had done best with him. Mr. Palmer stated that he had planted the varieties mentioned by Mr. Pilgrim, but had met with no success. Mr. Plumb said that Mr. Pilgrim had named a list that was not doing at all well west of Milwaukee county. Mr. Plumb also thought that it would be impossible to make out lists of best trees that would apply to all portions of the state. In order to make out such lists we must know the locality for which the list is desired. In coming to Waupaca county from Milwaukee county, Mr. Pilgrim had crossed six geological strata and as many varieties of soil. Varieties grown in Waupaca county will not thrive in the southern part of the state. In order to make out lists we must know more than the latitude of the place. The state should be divided into sections according to peculiarities of location, etc.

Mr. Huntley moved that the president appoint a committee of three to make out lists for the several sections of the state.

Mr. Witt related his experience in raising apples. He sent to the New England states and procured the standard varieties from there. All these varieties have failed, with one exception. The kind he has left is the Harvey, and is a variety not generally known. He has four trees of this variety, which have been planted twenty-seven or twenty-eight years and they are alive and healthy. The blossom is from four to seven days later than that of any other variety in the neighborhood. The trees never overbear and the fruit ripens easily enough in the fall to allow the tree to mature its wood and shed its leaves before the winter sets in. The apple is a sour one and is not fit for eating before winter. Along with this tree he planted some of the Rhode Island

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Greening variety, but they have all disappeared from the face of the earth. No apple that he has seen is the equal of the Harvey. Mr. Smith wanted to know if Mr. Witt thought the sprouts of this tree would prove a success if grafted on to other tops. Mr. Witt thought they would.

The motion made by Mr. Huntley with reference to the appointment of a committee to make out lists for the different sections of the state was now carried.

Mr. Plumb stated that the only Wisconsin nurseryman at present growing the Harvey apple was Mr. Phœnix. In Mr. Plumb's opinion the climate does not by any means account for the killing of trees. The climate of course, is one of the causes but not the only one or necessarily the most important one.

The order of business was now resumed and Mr. Plumb presented a paper:

EFFECTS OF WINTER OF 1884–5.

By J. C. PLUMB, Milton, Wis.

So marked are the effects of the past winter that we may well give any needed time to inquire as to the extent and nuture of the injuries received, and the probable causes from which it came to be so unusually marked and destructive to our orchards.

Extent — The area most affected may be outlined as follows: West of the great lakes to the Missouri river, south to St. Louis, taking in the greater portion of Illinois, some of Indiana and nearly all of Iowa, Wisconsin, Minnesota and Dakota. Eastern Iowa was much more damaged than western, southern Wisconsin more than eastern, and northern Illinois as bad as southern Wisconsin.

It was indeed a winter of great severity throughout the entire country east of the Rocky Mountains, but for the pur-

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pose of this writing the area above described embraces all important to mention here, in its relation to fruit growing.

Effects — In our orchard, all half hardy varieties, such as Ben Davis and Greene's Golden, are injured past recovery, while others considered fairly hardy, like Pewaukee, Golden Russet, Tallman and Bailey Sweet, were badly injured. Even our "iron clads," Plumb's Cider, Fameuse, St. Lawrence and Utter were affected as never before.

Most of the Russians appear to be all right, as also the Wealthy, Northwestern, Wolf River, McMahon, and all varieties of the Siberian type. What I have stated above as to our own orchard is, I find substantially the case with nearly all of Southern Wisconsin, twenty miles or more back from Lake Michigan.

In the central and western portions of our state the effects of the severe winter are still more marked. In the fertile valley of the Wisconsin and Upper Fox, great havoc was made with the apple orchards.

A thousand bearing trees in the orchard of Henry Floyd, near Berlin, are swept away, and as we go nothwest the injury becomes more apparent, until in the Chippewa Valley nearly every tree not of the Duchess or Siberian classes, are injured past hope.

Mr. S. C. Miles, in Taylor county, says: "here, even the Duchess and Transcendent are not quite hardy enough, only the purely Siberians are uninjured."

In Minnesota the outlook is still more dark for the apple.

In Iowa, Mr. Patten, of Charles City, says: Pewaukee, Wolf River, Plumb's Cider, Fameuse, Walbridge and all not more hardy are injured badly, and out of one hundred varieties of Russians tested by him, only nine had proved perfectly hardy this test winter.

The Longfield he regards as but little, if any, more hardy than Fameuse.

E. R. Heisz, Hora Springs, Iowa, says "winter hardest on orchards of any since "55–6," even some young Duchess, two and three years in orchard are killed, Duchess, Wealthy, Wolf River and Fameuse look best, Antonovka appears all right, but part of the young Russians on trial were killed."

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Prof. Budd says that sixty-five varieties of his imported Russians started from the terminal bud this spring.

Harvey Fuller, of Iowa, confirms the report from that state, by saying that in Butler and Bremer (two counties just south of Mr. Patten), three-fourths of the trees in orchards are killed or badly injured; on clay soils the loss is lighter than on black, sandy, or limestone lands."

A correspondent of the *Prairie Farmer*, in Piatt county, Illinois, says, prospectively one-half to three-fourths of the orchard trees are dead. Ben. Davis suffered the worst, will have one hundred and fifty to two hundred trees to take out, nearly all on low land.

Peaches all and pears nearly all dead; no cherries this year.

In the nurseries we find great damage in nearly all the area named above. First, by root killing of one or two year trees. Second, by top killing mainly on one and two year trees which were severely pruned in early winter.

In our own nursery we found the most injury by root killing while the tops were in good order except as above stated, where the trees were severely pruned in early winter. All varieties alike suffered this form of injury most on dryest land.

Top killing was about alike in Wolf River, McMahon, Northwestern, Wealthy, etc. Ben. Davis wintered as well as any other among three and four year trees.

The exceptions to general injury are:

1st. The Lake Michigan region from Chicago to Green Bay; no doubt from better maturity of wood, and less extreme cold in early winter.

2nd. Varieties and locations that matured their wood early and fully before the cold snap. Thus Ben Davis in nursery wintered better than Golden Russet. High bleak locations proved most exempt in the orchard.

3rd. Varieties of extreme native hardiness, such as Duchess and many other of the Russians, also nearly the whole race of Siberians.

4th. Many half hardy varieties which were top-grafted on Siberian stocks, passed the ordeal safely, and now show no material injury from the severe winter.

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This statement of the facts of observation in a general way, leads me to ask for

THE CAUSE AND REMEDY.

The cause was two-fold: 1st. An unusually wet and warm October followed by early and extreme cold. We had six heavy rainfalls in October which prolonged fall growth. November 24th we had 10° below zero. December gave us six days below zero, the coldest 22°; the aggregate of the six days being 86° below. January 1st, 1885, showed great injury to our trees, which was doubtless made worse by the extreme and prolonged cold of that and the next month, but which would have been only as usual without the *early* cold, which came while the wood was yet unripened.

Most trees show injury only on the inner bark of trunks within two feet of the ground, showing that the ripening process, which commenced at the terminal buds, was not completed to the ground when the early cold in November and December caught them. The lake region on the east, and the Missouri bluff region on the west, escaped with less injury because that early cold did not prevail in those regions, and more perfect maturity of growth was secured.

The root killing mentioned above was from the dry soil and deep frost in March, after the snow went off; the same conditions were also fatal to the clover roots, and winter wheat.

The lessons we learn are: 1st. *High and dry ground for the orchard site,* is a first condition of success where maturity of wood growth is essential to hardiness.

2nd. A more careful selection of varieties which have proved equal to the test in any given locality and that such are now known to western propagators.

3rd. The evident fact that many fruits of finer quality, but second hardy, may be successfully grown where top-worked on a congenial stock of undoubted hardiness.

4th. That in all the area of deep freezing, the soil should be well saturated with water at the beginning of winter, or have a winter mulch sufficient to prevent thawing until the spring rains commence. And

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5th. That though we may not again experience so severe a trial within the present generation, we do well to heed these lessons; be satisfied to plant mainly that which has stood the test, and stand by those who have so patiently and perseveringly demonstrated the value of the new varieties of home and foreign origin, which prove of highest value to the planters of the northwest.

In the course of his paper Mr. Plumb remarked that most of the old varieties of trees had been killed by too close pruning last fall. The first appearance of injury was that the leaves did not grow. The general opinion is that the injury is in the top of the tree, but Mr. Plumb would locate the injury in the trunk instead. His theory is that the tree first ripens its fruit and leaves, or, in other words, its extremities and finally ripens itself. In the descent of the ripening process the trunk of the tree is the last part to be reached, and hence may be in an unripe condition when caught by winter.

Mr. Palmer asked why the south limbs grow when the balance of the tree does not? Mr. Plumb answered that if there was a dead belt entirely around the tree, it must die. But in most of the trees that are injured you will find as you will find living spots where the sap has penetrated. Mr. Palmer then said it seemed to him that if the body of the tree is the part that alone is injured by winter killing, then the sap, if it once reached the top, would be distributed through the whole top.

Mr. Toole thought that a great many persons would change their opinion with regard to standard varieties of trees this summer. In view of this change of opinion he suggested that a report of the committee on making out lists would be premature if made at only a day's notice as provided for in the motion. The effect of last winter proves that we must narrow our lists of standard varieties and that the area of successful apple culture is more limited than it has been thought to be. Mr. Toole stated that in the orchard of one gentleman there were not over fifty trees out of three hundred that withstood the winter. Among the fifty, the Duchess stands at the head, followed next by the

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Wealthy; then comes the Plumb Cider; the Golden Russet is badly injured; the Fameuse is very irregularly injured, some trees being badly injured and others scarcely at all. The Blue Pearmain proved hardy. The Fameuse generally bore well last year but was injured by scab. Such varieties as had passed the winter without injury were all making a good show. Mr. Toole spoke of another orchard in which he said there would be scarcely any fruit at all except from the Duchess.

Mr. Huntley now spoke of the difficulty of having a report from the committee on lists at the next morning session, suggested that the members of the convention be requested to hand in lists at the morning session, of such trees as had proved most hardy during the winter in their several sections of the state. In this way he thought that a larger and better test would be afforded. Mr. Huntley now made his suggestion in the form of a motion. The president was in favor of appointing a committee on lists, which committee should report in writing at the next fall meeting. Mr. Huntley's motion to have lists handed in by members at the morning session was seconded and carried. It was suggested that in making out these lists each member should mention the location and soil.

Professor Trelease said that the influence of geological formations upon the nature of the vegetation was one of the most prominent questions in horticulture. Inferences are constantly drawn from the original wild vegetation produced in any section, and many are guided by the class of of original forest trees. Three or four botanists are at present at work to solve this problem of the influence of soil formations, etc., upon vegetation. A list of trees made out for the different sections of the state to-day, could scarcely be of much value. Such a task requires the performance of a great amount of work. The foundation upon which such lists should be made is location and exposure, together with geological and geographical formation.

The president appointed J. C. Plumb, G. P. Peffer and A. L. Hatch as a committee to make out lists of best trees and report in writing at the September meeting in Madison,

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either with or without consultation as they may deem best. Mr. Plumb is to report for the northern and northeastern portions of the state; Mr. Peffer for southern and southeastern portions; and Mr. Hatch for the western portion.

The programme for the evening session was now announced, after which Mr. Wakefield read his paper.

THAT APPLE.

By J. WAKEFIELD, Fremont.

We have chosen the apple for our subject upon the present occasion. What more appropriate for a horticultural gathering? We might talk about small fruits, the grapes, the raspberry, the blackberry, the gooseberry, and that berry of berries, the strawberry, and perhaps find something interesting. We might also speak of flowers, the beautiful flowers, how much they adorn and beautify home, and make even farm life lose half its load of care, anxiety and weariness, and under it so pleasant and desirable.

We love flowers, we were raised among them in the far east. We were taught that love by one who is now where flowers never whither, and who learned us to lisp their names among our earliest articulations.

But we forget. We were to speak of that apple, and will confine ourselves to our subject.

What will the apple of the future be? The apple of the present is certainly, in beauty and flvaor, more desirable than the apple of the past. But has not beauty and flavor been purchased at the expense of hardiness? Is it not a fact that our finest grained, best flavored apples are generally, if not always, the tenderest. We some times fear that it is with apples as with humans, the best loved die first.

If some enterprising genius could manage to originate an apple, possessing the flavor of the peach, with the size of the pumpkin, and at the same time capable of withstanding the usual amount of neglect and abuse, his fortune

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would be assured, and he would prove a greater benefactor than the speculative Yankee who first taught our grandmother how to make pumpkin pies, and our grandfather the art of manufacturing wooden nutmegs.

How beautiful its early, fragrant blossoms, and what can be more charming than the ripe, showy apple? But the apple is not merely ornamental. There is probably no fruit that is used in so many different ways. Eaten alone, when ripe, it is simply delicious. It may be justly styled the king of fruits. How eagerly the child devours it, even when not ripe, in spite of those three evils which so afflict disobedient childhood — the worms, the stomach ache, and the doctor.

Then there's the pie, the green apple pie, "such as mother used to make," you know — juicy, rich, tart, double crusted, and with its own apple pie flavor. Other pies may be good, but for downright enjoyment, give us what we used to cry for so much when young — the never-to-be-forgotten apple pie — excelled by none, and equalled only by that pie of pies — the New England pumpkin pie, that peculiar Yankee invention, with its unsurpassed semi-creamy consistency and pumpkin deliciousness!

Then we have the apple sauce, the rich cider apple sauce, O, my! but isn't it perfectly delicious? What grown up boy has forgotten the big tub that used to stand in the back room containing the "forbidden fruit," which would be tested now and then in spite of maternal threats and spankings? We've been there ourselves and know all about it.

Baked apples are good, baked sweet apples and milk, or cream, if milk is scarce, are not bad to have in a large family of small children. They make a cheap and healthful diet, and it is our opinion that children raised that way make better men and better women than those raised in the usual manner — on crab apples and whiskey.

There is another preparation of the apple, known by the ancients as "cider," that used to be very popular, and would be still, but for its scarcity. Some decry it, and perhaps with reason, but our predilection for it is as strong as ever,

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even when we were in the habit of taking ours through a straw.

With its beauty and usefulness there is lots of *fun* to be got out of the apple. Did you ever attend an "apple paring bee?" Of course you have; so have we. It used to take about an equal number of both sexes, that is to say, of boys and girls, to make a successful bee. Let us for a moment fancy ourselves at one of the many that we have all attended, seated around the table, how nimble our fingers try to be, quartering and coring the fruit, after the pearers have denuded it of its beautiful covering, and fitting it for the stringers.

Ever and anon an eye, just one, is furtively raised to the old-fashioned clock on the mantle piece, to note the near approach of the short hand to the figures denoting the hour of nine, the time for fun to commence. *Then* work ceases, and play begins. Everything is hustled out of the way, and — but who does not remember that old-fashioned game, called "*Snap-and-buss-'em,*" and lots of other plays, as easily learned, and nearly as delightful? Dear, dear, but the memory of those good, old times *will* come once in awhile, and make us almost wish ourselves boys and girls again.

How fond the average boy is of that delightful sport called apple packing. We still remember our first and last lesson, brought to a sudden termination by being treed by an ugly mastiff, en-*tailing* upon us the loss of the most dilatory portion of our trousers, and teaching us a valuable lesson.

The apple was early spoken of by profane as well as sacred writers. It is a native of the eastern hemisphere. Apples are mentioned by such early writers as Theophratus, Herodotus, and Columella. It is described by Pliny as "a fruit with a tender skin, that can be easily pared off." He also tells us of crabs, as being smaller, "and for their harsh sourness they have many a foul word and shrewd curse given them." How true of the modern crab, even to the "shrewd curse."

The cultivated apple was found, so Pliny tells us, in the

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villas, near the city, "some trees yielding more profit than a small farm, and which brought about the invention of grafting." We have the names of some of the first grafters, Martius, Cestius, Manlius and Claudivs. We are told of the "quince apple" that smelled like a quince, produced by grafting the quince on the apple stock. Pliny also gravely tells us of changing the fruit to the color of blood, by grafting it on the mulberry. Who will dare to charge the ancients with being numskulls? Columella wrote some years before Pliny. He gives us three methods of grafting, as handed down to him "by the ancients." So, the art of grafting is not exactly a modern art, as many suppose.

The apple was introduced into the American Colonies at an early period. The "Governor and Company of Massachusetts Bay, in New England," caused apple seeds to be brought from England as early as 1629. The Pilgrims cultivated apples near Plymouth, soon after their arrival. In 1636. Rev. Wm. Blackstone planted the first orchard in Rhode Island, near Pawtucket. In Connecticut the apple was planted previous to 1645. In 1647, apples were grafted in Virginia upon the wild crab.

When was the first cider made? We have exhausted our resources in the effort to solve that important question. We copy an extract from a work now before us: "The making of cider was introduced into Britain by the Normans, who, it is said, obtained the art from Spain, where it is no longer practiced. This liquor is supposed to have been first known however, in Africa, from its being mentioned by the African fathers, Tertulliaw and Augustine and was introduced by the Carthaginians into Biscay, a province unfriendly to the vine, on which account it became the substitute in other countries."

If age is any sign of respectability, the apple is entitled to be ranked the most respectable of fruits. It certainly belongs to a very ancient family. Its fame is coevil, or nearly coevil with its creation. It may be improved by cultivation, or it may degenerate from neglect, but it will remain, what it ever has been, the fruit for the craving millions—the poor man's food, and the rich man's luxury.

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After listening to Mr. Wakefield's paper the Convention adjourned until 7:30 P. M.

EVENING SESSION.

WEDNESDAY, June 24, 1885.

The convention was called to order by President Smith at 7:30 o'clock.

The committee on programme had arranged to have the paper of Mr. Gibson, on "Shall We Plant Crab Apples." Mr. Gibson was not present, but the following letter was read by Mr. Plumb:

Mr. President, Ladies and Gentlemen;

When it was decided to hold this session of the State Horticulutral Society at Weyauwega, I was requested by some of the members of the County Horticultural Society to furnish a paper for this meeting. I consented to do so, and chose for my subject, "Shall We Encourage the Planting of Crab Apples." At that time, with my fruit cellar well filled with choice standard apples, I thought it unnecessary to grow such inferior fruit as crab-apples, but upon looking over my orchard this week and finding my standards all dead or dying, the crabs all thrifty and loaded with fruit, poor though it may be, I could not condemn them, and concluded to withhold my paper from the Society, and offer this as my apology for doing so. I find after more than thirty years' experience in growing apples in Wisconsin, I have learned but little about the business. I do not know how to save my trees. Brother horticulturists, can you tell me how?

Respectfully, HOLLIS GIBSON.

LIND, Waupaca County, Wisconsin.

The following report was presented by J. P. Roe:

REPORT ON CONDITION OF WISCONSIN FRUIT IN HORTICTLTURAL HALL, NEW ORLEANS EXPOSITION, AT DATE OF MARCH 30, 1885.

By J. P. ROE.

About the latter part of February or the 1st of March, a request was received from Mr. Springer that notes should be made of the keeping qualities of the seedlings from his section. At the date of his letter we were too ill to attend to it in person and requested a friend to give it his attention. This he promised to do but we fear that it was overlooked.

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It was not until the 30th of March that we were able to give it our personal attention, and visited Horticultural Hall on that errand. We found that the exhibit of Wisconsin fruit had been moved from its former location at the entrance of Horticultural Hall, to a side table on the left hand, south of the fountain. I learned that much of our fruit had been stolen by the night watchmen — indeed things reached that pass that about this time the nightwatch was discharged and the Hall only left locked at night. Of course the long weeks of exposure under a semi-tropical sun had had their effect, and it must be borne in mind too that our Wisconsin fruit had at the outset been seriously injured by neglect and overheating in cases, and the consequent appearance of of the fruit was (as the writer was assured by the chairman of the committee on awards) the sole reason that Wisconsin did not take the sweepstakes premium of the gold medal and two hundred dollars, as awarded for the largest and best show of not less than 200 varieties.

The section to which Wisconsin belongs, being north of parallel 40° north latitude, and east of the Rocky Mountains, including the Atlantic sea board, New England, the North-Middle and North-Western states to the Canadas, is the largest apple growing section in the world. We might say the natural habitat of the apple that here in its own special realm, and in that magnificent assemblage of the belles of the orchard, that a Wisconsin seedling should bear off the palm for size and beauty in that acknowledged to be the largest and finest collection the world has seen, is a matter of which every Badger state man and woman should be proud, and the citizens of Waupaca county in particular; for in that splendid collection of new and choice seedling apples, by which the citizens of Waupaca county have added so much to the wealth and happiness of the state at home, and the honor of the state abroad. The Wolf River takes the lead out of the few scattering survivors of the hundreds of varieties sent out from our state, which remained on the tables the 30th of March. The best plate then was the Wolf River. Our note reads as follows: March 30th., Wisconsin fruit on hand. "Wolf River fine plate." Of the Waupaca county

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seedlings standing well up were "Wrightman, Wrightman's Winter Blush, Lovejoy, Blanche, Nora, Bertha, Baker's Sweet, Bloomfield, Daniel, Vosburg, Barnard's Red Winter, Long John, Longfield, Bone's Greening, North-Western Greening, Thina, David's Seedling, Plymouth, also Wealthy and the Russian Repka Malinka, Winter Pepper, Canada Red and Red Seek and Feather.

The splendid results obtained at New Orleans with the magnificent showing of seven silver medals out of the sixteen obtainable, of the highest per centage of cash premiums and largest number of premiums and the largest amount in cash of any state of the great section referred to; the finest plate of apples of over 20,000 plates on exhibition, all this belongs to Wisconsin and largely to the horticultural taste and enterprise of the wide-awake public spirited citizens of Waupaca county. While by common consent the winter convention held at Waupaca was pronounced the best ever held under the auspices of the Northern Fair. May the like be said of the summer's gathering under the auspices of the State Horticultural Society at Weyauwega. It was the intelligent enthusiastic co-operation of the community which made the former a success. May the like be true of the latter.

We would say in conclusion, that the extraordinary size and beauty of the fruit sent out from Waupaca county has justly won the admiration of the horticultural world. Now in this period of calamity, when the orchards throughout the state are showing how severe the blow dealt by the excessive cold of the past winter — long to be remembered as the cold winter of 1884 and 5 — in the total break down of our iron-clad list, the eyes of the state again turn toward the seedlings of Waupaca county. If they bear off the palm for *hardiness* as they have done for size, quality and beauty, our highest hopes will be realized and will make the whole state your debtors.

The president invited the friends from Waupaca county to discuss Mr. Gibson's letter. Mr. Wakefield said that six

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or eight years ago he set out a number of apple trees, about half of them crabs. At that time Mr. Gibson asked him why he did not set out standard varieties, and did not see the wisdom of setting out crab apples. Mr. Wakefield said that he was going to have apples this year and Mr. Gibson was not, except crabs. Although we must keep on trying to raise standard apples, Mr. Wakefield thinks we must have something else to fall back upon. Crabs are worth raising, and the majority of the varieties of crabs had by Wakefield came through the winter in good shape. Mr. Rhodes said that he had no reason to be dissatisfied with crab apples. Upon coming to Wisconsin, Mr. Rhodes was advised to plant crabs, and did so, setting out about seventy-five Hyslops, twenty-five Transcendents and some others. None of the kinds set out have blighted except the sweet crab. One variety of the sweet crab, the Soulard, has not proved hardy. In Mr. Rhodes' opinion, crab apples are profitable to raise, for they always bring a good price and have at times brought even more than the standard varieties. The Hyslop he finds a good keeper, being in its prime until February. The Transcendent does not keep as well. In reply to a question, Mr. Rhodes stated that a portion of his orchard had been cultivated, and a portion not. In the cultivated portion everything has died out except the Duchess and Transcendent.

Miss Lewis now read her paper on "The Mistletoe."

THE MISTLETOE.

By MISS JESSIE R. LEWIS, Madison.

The mistletoe is a plant we are all especially interested in on account of the many superstitions, associations and legends connected with it, also because of its peculiar life and growth.

The mistletoe has been held in high honor in England from the days of the Britons to our own time, only the oak on which it grew and is still occasionally found has associations more venerable and historic.

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The mistletoe is a parasitic plant forming an evergreen bush about four feet in length, thickly covered with branches and opposite leaves. The leaves are about two inches long, thick and yellowish green. The flowers which are small and waxy are almost white.

The English mistletoe belongs to the Loranthaceæ family, while the botanical name for the American or false mistletoe is Phoandendron-flavescens.

The mistletoe, though found in all parts of England, is more rare in the northern and midland counties. In America it grows in the southern and eastern states. There can be but little doubt that in by far the majority of instances it is chance sown. Most probably its seeds have been dropped by birds, but that from some other cause the wood of all trees is not equally fitted to receive it and support it. When its seed has once found a congenial home within the bark of the tree, like a true parasite it drives the fangs of its roots deep into the wood.

It is well known that the mistletoe likes best to grow upon the apple tree, though found so constantly on the latter, it seldom, if ever, grows on the pear.

Next to the apple tree it loves the poplar, lime and white thorn, and is occasionally found on the willow, sycamore and maple. It draws the life from trees on which it grows, which after a while wither and die, forming a mere support for the plant.

The mistletoe is in so much demand now, during the holiday season, the farmers of England and France find it profitable to encourage its growth, even though the parasite kills the tree at last.

After the mistletoe is packed in large wooden crates it is sent in great quantities to New York and London. For New York it is gathered near the end of November, for London it is harvested a few days before Christmas. It is still used for the decoration of homes during the holidays, and is sometimes left hanging to the chandeliers withered and dry until another Christmas tide brings fresh boughs and berries.

The hanging of the mistletoe is a cause of much frolic and

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laughter in the house, for it is the rule that whoever is passing under the mistletoe bough must submit to being kissed then and there by whoever chooses to take that liberty. The origin of this use of the mistletoe is not known.

More than 1800 years ago, England was an island inhabited only by savages, who wore garments of skins and lived in huts of mud and stone. Among the savage Briton's there were Pagan priests called Druids. We fine in Cæser the first, and at the same time, the most circnmstantial account of the Druids. He tells us that all men of rank and dignity in Gaul were included either among the Druids or the Nobles. The former where the religious guides of the people, as well as the chief expounders and guardians of the law. As they were not a hereditary caste and enjoyed exemption from service in the field, as well as from payment of taxes, admission to the order was eagerly sought after by the youth of Gaul.

These Druid priests lived in dense woods far away from other men, and in the gloomy solitudes of the forests, performed strange mystic ceremonies.

The sacred groves as they were called were of oak, for the oak was a divine tree according to the Drudical religion. Within these sacred groves, the priests offered their sacrifices and in some way — not now known — employed the mistletoe.

But *all* mistletoe was not sacred to the Druids, they would have none but that which clung to the tree and was nourished by the sap of the divine oaks. To them, the apple tree mistletoe which modern England and America use so freely, would be a worthless and common thing. The Druids considered the oak as the emblem, or rather the peculiar residence of the Almighty, and accordingly chaplets of it were worn both by the Druids and people in the religious ceremonies, while the alters were strewn with its leaves and encircles by its branches. The fruit of it, especially the mistletoe was thought to contain a divine virtue, and to be the peculiar gift of heaven.

It was therefore sought after on the sixth day of the moon with the greater earnestness and perseverance, and

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when found was hailed with rapture. When the end of the year approached, the old Druids marched with great solemnity to gather the mistletoe of the oak in order to present it to Jupiter, inviting all the world to assist at the ceremony with these words: "The new year is at hand; gather the mistletoe." A Druid, clothed in white, mounted a tree, and with a golden knife or sickle cut the mistletoe, which was received by another standing on the ground. When in later centuries England was taught the Christian religion by priests who went there from Rome, the people professing a belief in Christ retained many of their heathen rites and customs changed from the original meaning and purpose. At any rate, from the Druids has come the modern usage of the mistletoe bough. While to us the worshipping of the mistletoe bough seems but a foolish heathen superstition, yet, after all, there is something beautiful in it when we consider that to them the mistletoe growing on the oak represented man — a creature entirely dependent on God for support, and yet with an individual existence of his own.

"To the cradle bough of a naked tree,
Benumbed with ice and snow,
A Christmas dream brought suddenly
A birth of mistletoe.

The shepherd stars from their fleecy clouds,
Strode out on the night to see,
The Herod north wind blustered loud,
To rend it from the tree.

But the old year took it for a sign,
And blessed it in his heart,
With prophecy of peace divine,
Let now my soul depart."

Upon motion of Mr. Kellogg, Miss Lewis was unanimously elected an honorary member of the society.

Mr. B. F. Adams was called on for his paper on "The Dewberry." He stated that he had prepared no formal paper and so made a few remarks giving his experience with the dewberry. The dewberry is a low trailing plant which pro-

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duces a fruit like the blackberry, but its habits of growth are different. By horticulturists it has generally been considered not worthy of cultivation, owing to its not being profitable. The State Society once placed one variety of the dewberry upon its list of berries worthy of cultivation, but after a year or two the name was stricken from the list without question. Mr. Adams has had the plant under cultivation for about ten years, and has fruited it for eight years. The fruit is larger than any blackberry he ever met with, and also ripens earlier than the blackberry. It commences to ripen in the later part of July. He has about one-tenth of an acre planted to these berries. Last season he got no fruit from them. The winter previous the plants were without covering. From this patch Mr. Adams has raised about two hundred quarts in a season, but has used them up mostly at home. As so few are raised these berries bring a high price. Mr. Adams has never received less than twenty-five cents per quart for those he has sold. They have proved profitable to him for family consumption alone, and they could be made still more profitable by thorough cultivation. Mr. Adams has not really cultivated his plants. During the first two years they did not produce much fruit, but began to bear in the third year. In this climate where nearly all plants have to be thoroughly protected from the cold, the dewberry should recommend itself for more general cultivation. Time should be taken for a thorough test of the berry. The dewberry does not get through bearing before the blackberry begins to bear; fruit from it can frequently be picked in the month of September. The dewberry plant likes to trail in shady places, and Mr. Adams does not think it produces any more fruit by being trained. He has them planted in two rows about three feet apart and twenty-five or thirty rods long. The soil is a clay, but not a hard stiff clay. He has, however, raised the berry on a hard, stiff clay soil. The plants bear every year but vary in the amount of the yield. Mr. Adams has no personal knowledge of any other variety than the Mammoth Breeder.

Mr. Kellogg discussed the dewberry and thought that it would repay cultivation.

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Mr. Toole now read his paper on "First Principles in Flower Culture."

SOME FIRST PRINCIPLES OF FLOWER CULTURE.

BY MR. TOOLE, North Freedom.

Adaptation is a favorite word with horticultural writers, which might well be made use of in considering the subjects treated in this paper, for if all of the conditions furnished are adapted to the needs of plants, then success in their cultivation is assured. There are two phases of the question of adaptation, leading to theories which if inflexibly adhered to quite often result in error: The one in regard to the adaptation of particular specimens of plants, only to certain soils and climatic conditions. The other to a supposed law of succession or relation of some kinds of trees or plants after others.

We see the graceful harebell swaying in the breeze o'er some soil capped rock, or high up a gravelly bank, and we conclude, perchance that it needs a dry and airy place in which to thrive; but in our rambles, we find it flourishing where some fence has been removed from, or in some abandoned roadway, in soils rich or poor, and we learn that room enough is its greatest need.

The wild Turks cap lily would seem as we find it in its native habitation to be adapted only to swamps and wet meadows; but if we care for it in our gardens, it thrives to proportions never attained in wildness.

Our beautiful native ferns are associated in our minds, with shady nooks and sheltered glens, and they seem as if they would only be, where they must be sought for, but we take them to our homes, and keeping encroaching plants from them, they are content with but little of the shelter and retirement which seemed so necessary to their native wilds.

Travelers write of a rare Alpine flower the Edelweiss, which is much prized by tourists as mementoes of their mountain climbing, because it is found only in almost

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inaccessible places, seeming to shun civilization, but the Edelweiss is grown easily in our gardens.

Our early woodland flowers blooming and making their growth during a few short weeks of spring are found in places where dense shade saves them from being grass bound while they rest; but we may have them in our gardens, if we do not forget them when their beauty has passed away.

The white pine and paper birch would seem from choice to have selected the two extremes of rocky bluff points and swampy land, but the thrift of younger trees which have sprung up here and there since running fires have been prevented, indicate that they were forced to dwell where the seeds could germinate and the young plants have room to grow. We cut away a grove of white oaks and poplar or soft maple may spring up, but in a few years a fire has swept through our young forest, and hard maples have followed. A few Norway pines overhanging some rocky ravine have escaped the annual fires until the fires having ceased to occur in the neighboring wild lands after a few or many years, a young growth may start and perhaps it is years again before all the conditions are favorable for another young growth to spring up in like manner.

Thus we see that many plants are found in places not in all respects the best adapted to them, but the best that is left for them in the struggle for existence with those which are the strongest, when sunlight and air abundant and thus we see that the chances of life for the young of some species determined where their future growth may be, for nature produces and sows her seeds with a lavish hand, that something may grow after all adverse happenings.

If our flower seeds cost nothing of care and money, we might trust to luck, and plenty of seeds, but life is short and but a small part of the world's gardens belong to each of us. The professional florist can ill-afford to trust his costly seeds to the chances of alternate drouth and excessive wetness. Very many varieties of flowering plants are easily transplanted therefore all such should be started in a nursery bed where care can be given, which could not be

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afforded to each seed separately where the plants are to finally grow.

Next to too deep covering, no cause of failure is more common than permitting the seeds to dry after sprouting, and before the roots have reached down to where the earth is likely to continue moist. The soil should be light and friable in the seed bed having a fair proportion of sand even for such kinds as thrive well in heavy soil after they are set out.

With nearly all kinds of flower seeds the lightest possible covering is sufficient so that they are really covered, and the smallest seeds do best if merely pressed into the snrface if they are only kept moist.

They should be sown in straight rows of course, that the soil may be stirred between until they are large enough to transplant.

To insure even depth of covering, and prevent too rapid drying, which will sometimes occur even with shading, the seed bed, after the soil has been made fine before sowing, should be pressed smoothly and evenly with a piece of board, then shallow furrows may be made with the sharpened edge of a piece of lath about eight inches long.

The seeds being covered by brushing, a little soil over them with the fingers, the bed should be again pressed smooth with the board, and it is then ready for shading.

If the bed is to be large, sides and ends of boards eight to twelve inches deep should be provided to support the covering, which should be of laths, narrow pieces of board with an inch space between, pieces of sheeting stretched tightly or even evergreen branches.

Water by sprinkling whenever necessary must be given, the quantity and frequency of application depending altogether on the dryness of the air, the condition of weather sometimes being such that none is needed.

Delicate seeds must be protected from beating rains, else our best efforts may be defeated from this cause alone.

To illustrate, I will mention once visiting Mr. J. W. Wood, of Baraboo, where he called my attention to a field of onions in rows intended for setts. On part of the field there was a

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good stand; the plants on the other portion were few and scattering. I suggested that the difference must be due to quality of seed, but he said the seed was all of one lot, and explained that he commenced sowing when there were strong indications of rain, and was eager to complete his work under such seemingly favorable circumstances; but the rain interrupted him, and the work was completed as soon as the weather was settled.

The seeds sown after the rain seemed to have nearly all come up. Those sown first were nearly a failure. I have often had such experience with flower seeds and sometimes with sugar cane, melons and many garden crops.

When delicate seeds are started in the house in boxes, one of the "elastic" sprinklers, so useful for many purposes, becomes almost invaluable. After the seeds are fairly up the covering should be gradually dispensed with, as we must avoid so-called "damping off," which is promoted by too moist, close, and warm condition, also we should guard against too sudden drying. If the shading is removed immediately after it rains it is seldom necessary to replace it.

Our nursery bed in addition to promoting successful germination of seeds gives us opportunity to prepare our garden well for our plants to thrive in.

The soil should be stirred by digging or otherwise some time before setting out the plants, when necessary fertilizers may be applied. Frequent stirring should follow until the soil is made fine, after which the surface should be made loose after each rain until the plants are large enough to be set out. With this careful preparation the soil will be moist even in dry weather.

Without such preparations plants become slender and drawn, while we wait for needed showers.

We cannot too often mention the importance of pressing the soil firmly against the roots, when transplanting, this can be better done with a flat trowel, than with a dibble or other implement having a rounded surface. Care must be used to avoid setting small plants below the general surface lest after rains they be found partly buried, neither should

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the pressure be confined to the surface, leaving the roots below quite often in open space.

Our plants should not be too small when set out. They will bear removal best after they have commenced to throw out little lateral roots but before they are large enough to be broken. Of course but little earth can be removed with them, nor is it necessary. Several of them should be taken up together with a good depth of soil and roots. Gentle lateral pressure of the soil will cause it to fall away from the roots and they may thus be easily separated. If there is the least danger of drying, the roots should be sprinkled with water and a little fine soil thrown over them.

Transplanting promotes a more compact growth of plants and if the roots are not too much broken, it induces early flowering, but flowers are followed by seeds, which are exhausting to the plant, and seed bearing must be prevented if we wish a long season of flowering. Plants having long, slender roots, as the poppies, mignonette and others, do not bear transplanting well, but it is not difficult to make provisions for shading such where they are to grow.

It is usually advised to defer sowing flower seeds until the season has well advanced and the weather becomes warm, but there are many kinds which thrive better if sown as early in the spring as weather will permit garden work to be carried on. Of such may be mentioned nearly all of the pink family, helicrisians, acrocliniums, pansies, larkspurs, most of the perennials and about all of such plants as can be maintained with self sowing. Others must have warmth, and we lose them if we are in haste with early sowing, but lists of either class would make this paper too long.

It is strange that so many persons do not realize that good culture is as necessary for flowers as for vegetables and field crops, but we see many gardens which fail to fulfill the hopes of their owners for want of the soil being loosened about them until the plants are large enough to cover the ground, and it must not be forgotten that more plants than enough should be treated as weeds, but if we transplant, of

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course this need never occur. While of some kinds of plants, each is very much like the other, and we are safe with them in rejecting the weakly ones. Such is not the case with kinds which give us great variety in wide departure from the original type of the species. In growing pansies from a mixed lot of seeds the whites usually come in flower first, then mottled or perhaps striped, while among the last and often most weakly plants may be found some of the most beautiful of the odor class. In raising double petunias from seed the most forward and strongest plants are almost certain to have single flowers.

Some kinds of plants must not have the richest soil, as the growth of plants will be too much for the number of flowers. Others, like the pinks and pansies cannot be too well fed. Many people talk as if perennials once established require less care than annuals, but they must have cultivation or grass and weeds will soon remove them, and if they are not occasionally divided into smaller, thus making younger plants, they rot. Most of them give but a brief season of flowering in return for the space they occupy. Some most beautiful flowers are perennials and we should grow them for their worth, but whoever expects flowers in return for little care will be disappointed.

In seeking for new varieties from seed we wish for something rare and beautiful that will come true to name, but where variation has once commenced other changes may be expected to follow, and if we would be delighted with the charm of novelty, we must not expect constancy.

Time and careful selection are required to establish a variety. When saving seeds from kinds which are in variety, the different varieties should be kept separate, and the novice will be surprised to notice how much more freely some plants will bear seeds than others, and the care required to furnish a fairly proportioned mixture. For this reason, if no other, self sowing should not be depended on, for lack of variety and reversion will be the result. A majority of persons have been led to the belief that most kinds of flowers will "run out," in this country, because they have not understood the tendency to "breed back," as it is termed,

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and the sameness finally resulting from some varieties seeding more freely than others. Successful cultivation of flowers requires suitable implements, and in working among delicate plants we need something different from the common hoe. For killing weeds and loosening the soil about small plants, or in the nursery beds as well as in the garden, there are two little hand weeders which I have found very convenient and handy; one is called Lang's hand weeder, the other Hazeltine's. The first I find is preferred by our boys, among seedling plants, while the other, because of its large size is more efficient with weeds almost stout enough to need a hoe. We make a very handy tool of the common hoe, by cutting away the sides with a cold chisel to leave the corners quite pointed. A narrow, steel-toothed rake with positively sharp teeth is used between the rows to keep the ground mellow after rains, and a pronged hoe can be used to work about prostrate plants where the common hoe cannot.

During the reading of the paper Mr. Toole was asked what kind of manure he used in preparing the soil for flower seeds. He said that he used the common stable manure. Ashes are injurious to pansies and hen manure does not prove a success. Whatever fertilizer he uses is applied a day or so before the plants are set out. He does not always prepare the ground in the fall previous, but likes to have rain after the ground is plowed and before the plants are transplanted. He always propagates by sowing seeds and would not propagate by slips. He would not think of guaranteeing his seeds to produce but one kind of flowers. He sells mixed seeds. Even if one kind of pansy were carefully kept from all others the seed would vary when planted. This is due to the tendency of the pansy to vary. It takes time to establish a variety, but after due trial there will be but few changes to come in. The newer varieties always have more of a tendency to vary.

Mr. Huntley made a few remarks complimentary of Mr. Toole's exhibit of pansies at the state fair. He said that

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pansies must be well fed. The idea that pansies should be grown in the shade is erroneous. They may grow there but do not grow best. In growing them we should avoid heat, but aside from that we should not plant them in the shade. Mr. Kellogg spoke in favor of the use of hand weeders in garden work and flower culture. With a good weeder a boy at a dollar a day is worth more than a man at a dollar and a half without one. Mr. Plumb spoke of having recently visited Lincoln park, Chicago, and having seen there most beautiful beds of pansies grown from Mr. Toole's seed. He spoke of one feature of flower culture as he saw it carried on at Chicago. This feature was the growing flowers by massing the colors, having flowers all of one color in one bed. In his opinion this plan is worthy of imitation by all flower growers. The effect of such an arrangement of flower beds is very striking. Many flowers can be grown in this way to good advantage.

Mr. Toole asked Mr. Peffer if he thought roses could be covered too deep for winter. Mr. Peffer thought not unless they were covered too deep to keep out the moisture. He never covers his roses with earth but with forest leaves if they can be had.

The programme for the morning session was now read by Mr. Plumb and the convention adjourned until Thursday morning at nine o'clock.

MORNING SESSION.

THURSDAY, June 25, 1885.

The convention was called to order at 9 o'clock by President Smith. Members were then called upon to report lists of successful apple trees in their several localities. Mr. Palmer reported as follows: "My orchard is situated in Spring Valley, Rock county, on limestone soil and on an eastern slope. My trees that are apparently uninjured are Duchess, Sops of Wine, Red Astrachan, Fameuse, St. Lawrence, Tallman Sweet, Perry Russet, Willow Twig, Golden Russet, Tetofski and Yellow Transparent. I have six trees of Ro-

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man Stem that were set out in 1850. Five of these are all right and will have a good crop of apples this year, or rather they now have that appearance. The other one leaved out all right this spring, but the north side of the tree has not grown any, but still has not dried up as yet. The lower limbs on the south side are growing finely. The following trees in the orchard on the east slope are dead, or so nearly so as to be worthless: "Early Red, Fall Stripe, Rawles Jeanette, Gilpin (Romanite), and all of the Ben Davis, except one tree. The Northern Spy and Autumn Strawberry are half dead." Mr. Huntley stated that in his section of the state the Duchess, Tetofski and Wealthy had not been injured. Mr. Jeffrey gave the following as a list of thriving trees in Milwaukee county: "Duchess, Red Astrachan, Sops of Wine, Golden Russet, Fameuse, Yellow Transparent, Ben Davis, Yellow Bellflower, Tallman Sweet St. Lawrence, Tetofski, Perry Russet, Early Red, Red Romanite, Seek-no-Further, Fall Orange, Alexander, all fruiting well, and hardy." Mr. Daniell's list was read by the secretary as follows: "Duchess, N. W. Greening, Tetofski, Wealthy, Pewaukee, Snow, Astrachans, Fall Orange, Fall Sweets, Wolf River top grafts. Crabs are all hardy."

Mr. Barnes then read his list, which did not represent simply the hardy trees but rather was a list of such trees as he would advise any person to plant who was making up an orchard of a hundred trees, as contemplated in the original motion. The following is the list: "5 Tetofski, 20 Duchess, 10 Snow, 20 Wealthy, 10 Wolf River, 5 Price's Sweet, 5 Tallman Sweet, 5 Walbridge, 5 Plumb's Cider, 10 Pewaukee, 10 Golden Russet." Mr. Jenney made the following report: "My orchards, tnree in number, are situated on the ridge one-half mile south of the village of Weyauwega. The soil is a clay loam with plenty of boulders. Hard pan is struck at a depth of from two to two and a half feet. In 1874 I raised seventy varieties, in 1885 I have thirty left. The trees that did not hurt last winter are Duchess, Haas, Red Astrachan, Fall Orange and Wolf River. My crabs are all right. I have raised apples for market for the last fifteen years, and I have come to the conclusion that the Duchess and Hass

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are the best varieties for this climate, and also the best selling apples." Mr. Wakefield had nothing that survived the winter even fairly well, with the exception of crabs. Mr. Gibson said that some of his seedlings had come through uninjured; the Duchess and Wolf River were not much injured. He has about twenty of the latter variety, a dozen trees of which are bearing. He thinks they are a little slow in beginning to bear, his being nine or ten years old before they began to bear. Mr. Toole presented two lists made out for use at North Freedom, Sauk county. The first list was Duchess, Wealthy, Tetofski and Siberians; the second list, applying to a different soil and exposure, was as follows: Tetofski, Duchess, Plumb's Cider, Fall Orange, St. Lawrence, Blue Parmian, Seek-no-Further, Willow Twig, Utter, Hass, Pewaukee, Golden Russet, Tallman Sweet, Fameuse, Red Astrachan, Perry Russett and Walbridge. Mr. Bennett reported the Marengo (crab), Transcendent (crab), Duchess, Bennett Seedlings Nos. 2, 4, 6 and 7, Wealthy, Fall Orange, Tetofski and Haas as in good condition; the following varieties are injured badly: Briar Sweet (crab), Fameuse, Golden Russett, Seak-no-Further, Roxbury Russett, Fall Stripe, Black Detroit, Wolf River, Perry Russett, Tallman Sweet, Red Astrachan, Sops of Wine, St. Lawrence, Utter's Red, Ben Davis.

Mr. Tuttle said that he had some varieties that had been planted over thirty years and that had come through all sorts of winters uninjured; but since last winter, had not a single variety that is uninjured. Out of a hundred Fameuse trees, not ten are in good condition. Of trees that have been out for six or eight years there are not ten out of two hundred but must be dug out. The Utter, one of his best varieties has been killed. The Plumb Cider is injured a little. The Fall Orange is used up entirely. Whole rows of the Haas are entirely killed out. The St. Lawrence came through quite well. The Golden Russett is two-thirds destroyed. The injury to the trees is on the north side and so cannot be attributed to the sun. The Tallman Sweet trees are alive, but Mr. Tuttle thinks they might as well not be, for he has had no fruit from them for twelve years. The Pewaukee's are hurt a good deal. The trees that are in-

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jured are planted in a young orchard in rows two rods apart, east and west, and one rod apart north and south. There seems to be no difference in injury between those planted close and those planted farther apart. Steady, long continued cold does the injury to the trees, by driving out the moisture. Mr. Tuttle's trees were protected partially, by rows of pine trees. Mr. Palmer spoke against the idea of planting trees close together in order to afford them protection. The branches will interlace as the trees grow larger and the fruit is thus injured.

Mr. Tuttle was requested to report concerning the Russian varieties of apples. He examined them this spring before they leaved out and could discover no trace of injury, and this orchard stands thrifty and healthy to-day. No injury in twig or leaf. Another orchard of these trees was set out after the one above mentioned, in a place not fit for apple trees and in this orchard not one of the Russian trees have been injured. In another orchard of fifty varieties not a tree was injured. More than half of the trees of the first orchard have borne, and there is nothing among them that is not as hardy as the Wealthy, while many are as hardy as the Duchess. One tree that was girdled bore a large crop last year and is in good condition this year. This proves that the tree is hardy. Several of the eighty varieties bore exceedingly well last year, and so do not have much fruit this year, but the trees are healthy. Mr. Smith thought that apple growers should not be too hasty about removing trees injured by the winter. A few years ago they had some Fameuse trees that were supposed to be killed; but they revived and have borne well ever since. Mr. Tuttle here took occasion to exhibit an apple of the Antanooka variety — the leading apple of Russia. The tree on which the apple grew has been almost cut to pieces for slips, but has made a great growth this season, nevertheless. The Longfield trees have borne the heaviest crop of apples Mr. Tuttle has ever had. There are not many apples on these trees this year, but the trees themselves are healthy. The Longfield is the only apple out of a hundred varieties that will bear every year. It bears early, and is a very irregular tree in appearance.

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The discussion was closed at this point.

Mr. Hoxie now presented his paper, "Chips from a Carpenter's Tool Chest."

"CHIPS FROM A CARPENTER'S TOOL CHEST."

By our Corresponding Secretary, B. S. HOXIE.

To the Presideut and Members of the Wisconsin State Horticultural Society—You who have read the title to my subject, as announced on our programme, may well wonder what that has to do with horticultural topics; so if I fail to stick to my text, bear it in mind that all preachers can find good texts but all do not put in appropriate filling for the hearers, and mine will not be the first failure. Our worthy secretary, after reading my circular letter to the members of our Society and others interested in fruit culture, suggested that I prepare a paper upon the subject "Fruit Prospects for Wisconsin," and on that I shall have something to say; or rather, I shall make some of the members who are not present say it for me. In looking over our programme I said, surely here is an array of subjects, and the talent of the authors will bring out from their storehouse of knowledge thoughts which shall awaken investigation, and prompt to action for the benefit of all.

The organic act of our society sets forth, among other things for our object, the collecting and disseminating of valuable information for the benefit of the horticultural interests of our state. It is well sometimes to look up old landmarks, lest in our zeal for pet theories, or pet fruits (which in our case is quite as fatal), we overstep the limits of our organization. My experience as a builder well fits me to "hew to line," and my observations and great interest in horticulture qualifies me for a place with you, and if I score into the rotten wood it is not my fault, but if rotten timber goes into the structure then I am blameworthy. I remember the little pleasantry indulged in by some of the members at the time of my election to the place of corresponding secretary, and friend Stickney said "let Mr. Hoxie

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get what he can out of it." Now during the past two years with all of my efforts I have failed to get anything out of it but a good chance to put much in. But for fear my prelude may be longer than the sermon I must give you some of the chips that I have gathered up. I wish that my basket had been full to overflowing, but I suspect some thought their chips too valuable to go into a common receptacle and we may find them at some future time served up in a basket with silver lining.

The past winter by many was considered the most severe and trying to the fruit crop of any in the history of our society, and in sending out copies of the premium list for this meeting, I thought it well to enclose a short circular letter to our members and others interested in fruit culture, asking them to give me the condition of fruit trees, including our small fruits whether protected or not. The replies to that circular have been very general and generous, a summary of them was published in many of our papers under date of June 2.

I find that in the southwestern part of our state some varieties succeed that do nothing in other localities. Thus from Darlington the Golden Russet, Tallman Sweet, St. Lawrence and Utter, with Miner plums, are all in fine condition. From Spring Valley, near Brodhead, Mr. Palmer writes: My Roman Stems are loaded with blossom buds; Tallman Sweet and Golden Russett, though looking well, do not promise much fruit this year. My orchard is somewhat damaged by the depredations of leaf rollers, and I have just been trying a sprinkling of Paris Green. Two men with team and wagon went over five hundred trees in one half day, and I await the result.

From Albany, Green county: Your circular of the 14th inst. at hand. Small fruits except strawberries nearly all winter killed. Blackberries entirely so. Apple trees not many blossom buds with few exceptions; these are Duchess, Wealthy and Roman Stem. The winter has been very severe on most all kinds of fruits. Grapes are nearly all killed. Cherries only show a few blossom buds. I consider the Wealthy the best apple I ever raised.

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Let me remark that in some portions of Green county I have seen some of the finest old Duchess trees of any in the state. Trees that have been set for over thirty years healthy and vigorous and promise good crops for years to come. From Brookside farm, near Dayton, Green county, a very complete report of May 21: "To-day wife and I have been inspecting the orchard, and we find Duchess all right, full of fruit buds just ready to blossom. Tetofski, Golden Russett, Wealthy and Willow Twig are in good condition and promise some fruit. Utter and Fameuse will blossom full and look well. Haas shows plenty of fruit buds but the trees have a sickly appearance. Plumb's Cider in good condition but the off year for fruit. Walbridge promises as usual — nothing but leaves. Strawberry and Fall Orange are going after Ben Davis — to the woodpile. Cuthbert Raspberries killed down to snow line; Philadelphia when sheltered on the north and west by timber are all right.

From Rutland, Dane county: Russian varieties all right as well as some of our own varieties. The Wealthy, McMahon and Wolf River, seem to be as hardy as oaks. Fall Orange and Pewaukee will do for a trial a little longer. Among the worthless I consider the Autumn Strawberry, St. Lawrence, Ben Davis, Alexander, Walbridge, Rawle's Janet and Willow Twig, and the Golden Russett not much better.

Baraboo, Sauk county: Our recommended list of apples are all right with us. Blackberries are killed; strawberries generally looking well, whether protected or not.

Milwaukee May 24: I reply to your circular of the 14th inst. as follows. Duchess and Wealthy all right. Pewaukee, wood blackened somewhat but will blossom freely. Plumb's Cider was hurt a little. Twenty Ounce, Golden Russett and Willow Twig will blossom freely. Walbridge seems all right and promises a show for fruit this year. Tallman Sweet and St. Lawrence, green to the terminal bud. Prospect for apples is fair while that of pears is about average. Plums are blossoming freely, and cherries are setting full; raspberries and blackberries killed back badly, Gregg, and Stone's Hardy not excepted. Grapes seem to be all right

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and Janesville, kept tied to the stakes, are budding out nicely.

From Berlin, Green Lake Co.: This will truly be the sweepstakes winter for all kinds of fruit trees. We have lost all of the tender, half-hardy and some of the iron-clad varieties. Tallman Sweet quite badly hurt. Golden Russett, Red Astrachan, Fameuse and Perry Russett a shade better. Grime's Golden, my favorite, and for twelve years past very successful, are all gone. Pewaukee badly hurt; Duchess, Wealthy and North Western Greening are all slightly hurt. The Turner raspberry is with me, the most hardy, and alive above as well as below snow line. Ancient Britton with protection, is our great bearer. I have quite a large list of strawberries on trial but have discarded Sharpless, Bidwell and Big Bob as worthless here.

From Green Bay, Brown Co.: Wine Sap, Tallman Sweet and Rawle's Janet, my faverite, are badly injured. The Duchess, Bellflower and Tallman Sweet are my best varieties.

Fsom J. M. Smith, Green Bay: I have examined only one orchard and that appears to be all right, but have heard of damage in other places. I always protect my grape vines and all other small fruits, except currants, with earth and marsh hay.

From Richland County: A general injury to all trees; Golden Russett and Fameuse badly hurt. Bloom on all apple trees very light and pale, indicating a want of vitality. As usual, the McMahon's White Apple stands best of of all in hardiness. Gregg and Brandywine raspberries badly winter killed; Stone's Hardy and Snyder blackberries killed down to the ground.

From Warren Mills, Monroe County: Duchess, Wealthy, Tetofski, Walbridge, Plumb's Cider, Tallman Sweet and Russett do as well here as in any part of the state, but all have been badly injured during the past winter. I consider the Duchess best of all. Much interest is being shown here in the cultivation of small fruits.

From E. A. Webb, publisher of the Northwestern Farmer Fargo, Dakota: With regard to fruit trees in this section

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of Dakota, I think I can safely say they are coming out all right (that is, of the hardier varieties) and some Salome apple trees that I have are only killed back a very little. The Duchess is a success. Russian mulberries are winter killed.

Mr. Daniels, of Auroraville, Wis,, writes me that his Northwestern Greenings have come out all right. This, and McMahon's White, are new varieties, and only two correspondents beside Mr. Hatch and Mr. Daniels, the propagators of each variety, make any mention of them as having fruited the varieties. I have high hopes for both. I am very sorry that the friends of the Wolf River have not favored me with a report of that fine and showy fruit.

To the members of our society and others who have so kindly written to me and favored me with these reports I return my thanks. I have taken extracts from a few in different localities to show the general tenor of the whole. And what are the lessons? As a society we are looked to by the tree and small fruit growers for our report and recommendations. It is our duty to collect and disseminate valuable information; to be valuable must be truthful, so far as it lies in our power to make it so.

Does not our list of hardy varieties of apples need correcting, when we retain a nearly useless variety like the Walbridge, or talk of hardy varieties of small fruits that need no protection. It is well for the propagator of any new variety to give it all the push and prominence he can, but as a society we must be more than tree peddlers. It is all idle talk to say that a farmer will not dig a deep hole to set his tree with the tap-root entire, if he was convinced of the fact that nature demanded it, and that he could not raise perfect fruit without this protection. When a farmer will pay $1 for a poor specimen of a Mackintosh Red, thinking he is getting a good variety of fruit, perfect and hardy, he can well afford to dig a hole twenty inches deep to put it in, or spend a few hours time to protect his blackberry patch if he is convinced that it is necessary. We publicly declare against the tree peddler when some of our nurseymen behind the scenes set them on and practice frauds on a much larger scale and

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occupy prominent places in nurserymen's conventions. I am well aware that by this plain talk I shall put in jeopardy my chances for an election to congress, or the prospect of being president of the United States, but I have the honor of subscribing myself, very respectfully,

YOUR CORRESPONDING SECRETARY.

A discussion arose concerning the blackberry. Mr. Hoxie considered the Ancient Briton the best, but had heard from Mr. Tuttle that there was another variety which surpassed the Briton. Mr. Palmer stated that he knew a gentleman who had both the Snyder and the Ancient Briton, both being equally protected and there appeared to be no material difference between the two varieties. Another gentleman in Iowa has a patch of the Snyder and Briton varieties. Last year there was a great deal fruit from both varieties, but the gentleman considers the Briton the superior variety in quality. The Briton came through the winter in good shape while the Snyder was killed. Mr. Rhodes said that the great obstacle to raspberry and blackberry growing was the difficulty of protecting the bushes. Mr. Smith said that his mode of protecting raspberries was to bend the bushes over and throw earth on the tips of them. Strawberry plants he covered with hay. If raspberry bushes were on heavy soil Mr. Smith thinks it might be necessary to cut the stems a little to prevent them from breaking when bent. Mr. Daniells thought it a good plan to take a spade or fork and work it around the root of the bushes when the stems can be more easily bent over. Mr. Smith stated that his present patch of raspberries had been out but two or three years. The previous one was in seven or eight years. Mr. Rhodes had thought that a patch was seldom profitable after one or two heavy crops had been taken from it. Mr. Adams grew several varieties of raspberries and blackberries. Of raspberries he had the Cuthbert, Brandywine and Gregg's and of blackberries the Snyder and Stone's Hardy. In his locality he has found all these varieties to be good until last winter. Many of his Snyder blackberries

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were girdled by mice. A portion of the Snyders which were not protected by the snow were not girdled. The Cuthbert, which bore heavily last year, are growing well this year and will bear a little fruit. He likes the Cuthbert better than the Philadelphia.

The discussion was suspended to listen to Mr. Rich's paper, which follows:

SMALL FRUITS.

By O. A. RICH, Weyauwega.

The hints on planting and management of small fruits has been so often presented in these meetings and published, that whatever I may have to say will fall far short of being new and interesting. The importance of these fruits as a source, not only of health, comfort and luxury, but as a source of profit is yearly increasing, and with the improved varieties, and with economical methods of culture, our homes and our markets may well be supplied with these wholesome fruits with but little cost, but those who would know their delicacy and what "big beauties are, must have them fresh and at home," and at a small expense for plants united with their labor, enjoy an abundant supply.

A well-kept strawberry bed is a thing of beauty, and if not a joy forever, will well repay the labor required to keep it in order, when one has in mind the rich treat in store for him about this time of the year.

I shall not undertake to give you specific directions for planting, future management and marketing, for if any one is really desirous of engaging in the business, just let it be known and you will find it an easy thing to obtain all needed information. None of us are under the same circumstances, and what would do for one would not do for all, and so my advice is, not to do as others have done, begin and then neglect their grounds for awhile, but begin and keep at it, for the reason that every family may have and should have, an abundant supply of strawberries, currants, raspberries and

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blackberries. These several kinds will keep our tables well supplied throughout the fruiting season, will add to our comforts, contribute to health, be a source of economy, save doctors' and grocers' bills and make home pleasant, both to the old and young.

If any one is anxious to gain notoriety, I know of no way easier than to plant out a field of small fruits, and to carefully cultivate them until the fruiting season, when to your surprise you will find yourself on an equal with the breeders of fine stock or a bonanza farmer.

As to the varieties of the several kinds of fruit desirable to plant, one needs to get well posted. According to the published list all are the best, but experience proves that some are good, and some are almost, if not quite, good for nothing. We are advised to plant the early, medium and late varieties for the purpose of prolonging the strawberry season, and I notice that one of our state horticulturists, very eminent for his exposures of humbuggery, in his catalogue, says he has a variety that will ripen a half hour ahead of any other. That being the case we can have a new variety by just simply waiting thirty minutes, which will make a change as often as anyone could really desire. With these random thoughts I close with a few notes upon the present season.

As all are aware we have just passed a very trying and severe winter. Very many of our fruit trees have died in consequence, and we hardly expected to see our vines and canes come through in as good a condition as they have, and we were well pleased to find that but little damage had been done by frost under the snow, about as much by the mice or moles as any other way, but above the snow our raspberries and blackberries were hurt very badly.

Since the beginning of warm weather our small fruit has made a fine growth, bloomed profusely, setting the fruit well for an abundant crop. But alas, for human hopes. On our light, sandy soils we are looking for fruit, and finding but very little, if any. The blighting and withering effects of strong south winds, added to the cooling effect of the night atmosphere, with but very little rain for the last three weeks

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has been too much, and our prospects to-day for small fruit is indeed a small one. Should rains soon come it might insure us a medium crop.

The secretary read the following synopsis of the premiums awarded.

PREMIUMS AWARDED AT THE SUMMER CONVENTION AT WEYAUWEGA.

Greatest display of apples, Geo. Jeffery, Milwaukee	$3 00
Second best, D. T. Pilgrim, West Granville	2 00
Best plate Pennoch's Red Winter, Geo. Jeffrery	1 00
Seedlings, "Bennett," A. S. Bennett, Weyauwega	1 00
Seedlings, "Mathews," J. A. Mathews, Weyauwega	1 00
Seedlings, "Rich," W. Wilson, Weyauwega	1 00
Seedlings, "Smith," Albert Smith, Weyauwega	1 00
Best plate Golden Russett, C. M. Fenelon	1 00
Second best, Geo. Jeffery	50
Northwestern Greening, discretionary premium, E. W. Daniels, Auroraville	50
Display of strawberries, G. J. Kellogg, Janesville	5 00
Second best, James Roe, Oshkosh	3 00
Five varieties of strawberries not on list, G. J. Kellogg	2 00
Second best, Jas. Roe	1 00
Best plate Bidwell, Jas. Roe	1 00
Second best, Geo. J. Kellogg	50
Best plate Captain Jack, C. F. Eaton, Fremont	1 00
Second best, Geo. J. Kellogg	50
Best plate Charles Downing, Jas. Roe	1 00
Best plate Crescent, Mrs. A. Radley, Lind	1 00
Second best, O. A. Rich, Weyauwega	50
Best plate Cumberland, A. G. Tuttle, Baraboo	1 00
Second best Jas. Roe	50
Best plate James Vick, A. G. Tuttle	1 00
Second best, Jas. Roe	50
Best plate Longfellow, C. F. Eaton	1 00
Second best, G. J. Kellogg	50
Best plate Manchester, Geo. J. Kellogg	1 00
Second best, A. G. Tuttle	50
Best plate Hart's Minnesota, A. G. Tuttle	1 00
Rest plate Miner, G. J. Kellogg	1 00
Second best, R. Callender, Fremont	50
Best plate Piper, Geo. J. Kellogg	1 00
Best plate Sharpless, R. Callender, Fremont	1 00
Second best, A. S. Bennett, Wyauwega	50
Best plate Wilson, G. J. Kellogg	1 00
Second best. Jas. Roe	50
Best plate Windsor Chief, G. J. Kellogg	1 00
Best unnamed variety, A. G. Tuttle	1 00
*Best seedling strawberry, "Jessie," G. F. Loudon, Janesville	1 00
Best display house plants, Mrs. M. E. Potter, Weyauwega	4 00
Second best, Miss Keeney, Weyauwega	2 00

*This is pronounced by the judges to be "a very promising variety, one of the largest on exhibition. Juding from the fruit on the stems it is a good bearer."

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Best plant in bloom, Mrs. R. M. Hubbard, Fremont	$2 00
Second best, Miss Keeney, Weyauwega	1 00
Best Fuchsia, Mrs. O. A. Rich, Weyauwega	2 00
Second best, Mrs. Albert Smith, Weyauwega	1 00
Best collection pansies, Wm. Toole, North Freedom	2 00
Second best, Wm. Springer, Fremont	1 00
Best display cut flowers Mrs. O. A. Rich	3 00
Best boquet cut flowers, Mrs. O. A. Rich	2 00
Second best, A. S. Bennett	1 00
Best collection roses, Miss Kate Peffer, Pewaukee	3 00
Second best, G. J. Kellogg	2 00
Best boquet Madame Plantier, Wm. Springer	1 00
Best boquet General Jacquenimot, G. J. Kellogg	1 00
Best boquet moss roses, Wm. Toole	2 00
Second best, G. J. Kellogg	1 00
Best display of wild flowers by child under 15 years of age, Flora Rich, Weyauwega	3 00
Second best, Willie Springer, Fremont	2 00
Third best, Daisy Rich, Weyauwega	1 00
Best display ferns, Wm. Springer	2 00
Second best, Miss Keeney	1 00
Best display vegetables, J. M. Smith, Green Bay	5 00
Best peck peas, Albert Smith	1 00
Second best, C. F. Eaton	50
Best bunch lettuce, J. M. Smith	1 00
Best bunch asparagus, J. M. Smith	1 00
best bunch beets, J. M. Smith	1 00
Best bunch onions, J. M. Smith	1 00
Second best, Albert Smith	50
Best bunch pie plant, C. F. Eaton	1 00
Second best, J. M. Smith	50
Best bunch radishes, E. Wrightman, Weyauwega	1 00
Second best, O. A. Rich, Weyauwega	50

JUDGES.

On Fruit — George P. Peffer, Wm. Wilson, E. Wrightman.
On Flowers—Julia J. Trelease, Mrs. H. M. Hubbard, Mrs. T. H. Sexton.
On Vegetables—D. Huntley, O. A. Rich, Albert Smith.

When the discussion of the small fruit question was again resumed, Mr. Toole stated that he had had best success in growing black cap raspberries, when they were grown on black soil. Wherever he has seen them grown on sandy soil they have been short lived. The white crickets have seriously injured his bushes. They deposit their eggs in the fall and the plants injured look about as they would after a visit of the seventeen-year locusts. The plants wither up and produce no fruit. Mr. Rich said that his bushes made a good growth last year. He pinched them back and they threw out laterals. He had also cut them back this spring on the laterals to about a foot or sixteen inches in length and they are doing well. Mr. Rich thinks that if raspberries are pinched back early enough they will grow stubbed and will get ready for winter. We should

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have them under control and not allow them to grow at will. Mr. Plumb said that in the course of several years he had discovered no great difference between the Snyder and Stone's Hardy blackberry. The Ancient Briton is enough better to pay for the extra protection it requires.

In Mr. Plumb's opinion, the Ripon people have been very successful in practice of laying raspberry and blackberry bushes down for winter protection. In this way of laying them down a plow is run close alongside the row the dirt being thrown away from the row. The surplus wood is removed from the bushes. A man follows the plow with a spade and after loosening the earth about the roots pushes the plants down and covers the tops with earth. The roots are like ropes and will not break. Mr. Plumb thinks that this is the most economical way of protecting blackberries. Mr. Stone's great success with blackberries was accomplished on poor land. The manure and the cultivation were applied early in the season and in that way strong canes were secured. Mr. Plumb thinks we should take the best protection for the bushes that we can get. The plowing between the rows of berries does not materially increase the number of suckers. The plowing may be done as near as possible to the bush and no injury will result.

Mr. Tuttle stated that his biackberries had been killed above ground during the last winter, owing to their not being protected. Mr. Hoxie was opposed to the State Society any longer giving countenance to the assertion, that the Snyder and Stone's Hardy blackberries will do without protection. Mr. Plumb stated that he advised a neighbor, who was planting a patch of blackberries, to keep them cut back to one foot. The neighbor kept them cut below two feet, and they proved a success. Mr. Tuttle stated that he had tried the same plan, but met with no success. Mr. Jeffries had pinched the Stone's Hardy back, but had failed to protect it, and it had been killed.

The Ohio raspberry does not seem to need protection. Mr. Huntley disagreed on this point; but Mr. Plumb supported Mr. Jeffery's assertion and said the Ohio had proved hardy

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everywhore, but no red raspberry has hroved hardier at Ripon than the Hanson.

Several gentlemen here spoke of the original Wolf River apple tree. The impression seemed to be that the tree was dead. Mr. Springer, however, said that it was not. It had been fire blighted but had come up again.

The convention now adjourned until half after one o'clock.

AFTERNOON SESSION.

THURSDAY, June 25, 1885.

The convention was called to order at half past one by President Smith. The exercises of the afternoon were opened by music by the Weyauwega Glee Club. Mrs. Rich then read a paper, "A Half-Hour among my Flowers."

A HALF HOUR AMONG MY FLOWERS.

By MRS. A. O. RICH, Weyauwega.

One of the most enjoyable experiences of a farmer's wife is in the cultivation of shrubs and flowers of the garden. Who does not love to go out in the spring as soon as the snow-banks disappear and watch for the first opening flowers, and seldom are we disappointed, for just in our path the tulip is peeping above the soil, and by its side the beautiful pansy already lifts its proud head, and as you look down into its pretty face with eyes so bright and blinking in the sunlight that it seems to say, we have come to gladden you with our presence and help to make the spring enjoyable.

Not only these, but as the season advances, scores of other flowers put in their loveliness, from the delicate blue forget-me-not to the magnificent hibiskus. Among the long list of flowers we have a great variety of color. The lilies speak volumes for themselves. True, it is said that they toil not, neither do they spin. Solomon in all his glory was not arrayed like one of these. God has provided many tokens of his goodness towards us. As we look out upon the earth clad in a mantle of verdure, it makes our life brighter and

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happier, and makes us feel our dependence, and helps us to rely more perfectly on our great Creator for all the necessaries and comforts of life. Then let us, as we have strength and leisure, do our share in aiding nature in beautifying the lovely flowers that God has given us, that we may have a foretaste of that paradise above. Look at our Bible women. Eve's only habitation was the garden Eden, that she might well be proud of. Rebecca and Sarah, noble, pious women, endured fatigue and many privations that the world might be the better for their having lived in it. Are we better than they? Need we be afraid to soil our fingers or drabble our dresses with a half hour's labor in our flower garden, for the sake of having a few flowers to give the sick or to please the children. We feel it a pleasure to share our luxuries with others.

When Adam and Eve were placed in the beautiful garden made by our Creator, with the blue skies above them and earth's green carpet beneath them, they were all alone surrounded with the grandest and most beautiful scenery, while the air, laden with the fragrance of flowers and vocal with the melody of birds, they had no human heart with whom they could share their happiness, or to quiet the wild joyous throbbings of their hearts; no one to whom they could speak and say, "How beautiful this, our home;" "How good our Father who made it thus;" but I think Eve was a lover of flowers. Milton speaks of her going forth in the cool of the evening to gather roses to deck their bower, and as they sat on the soft, downy bank damasked with flowers, they said let us follow our delightful task to prune these growing plants and tend these flowers.

Rebecca, too, is likened unto the beautiful flowers. She is introduced to us as a girl of remarkable beauty and maidenly purity; a mother's love and joy. She was like a rose of fairest hue and sweetest fragrance in some select garden as she blooms into beautiful maturity.

Also Sarah was noted for her piety as well as for her beauty. She guarded well the ways of her son, and was ever dutiful to her husband, and the loving traits of her character is held up in the Bible as a model for wives, and

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she will always stand forth as an evergreen through all the endless ages of eternity.

Beauty anywhere is a gift of God, and not to be despised. Why did our Father cause flowers to bloom over so large a portion of the earth? They are not food; they give no shelter; they furnish no clothing. Why, then, did the earth bring forth flowers? To beautify it! to enliven it! to fling a gladness and brightness over the world! What flowers are to the earth acts of kindness, a gentle tone, a kind look is to the care worn soul, filling it with joy and gladness.

The paper on "The Thistle," prepared by Mrs. Kerr, was next read by Mrs. Trelease.

A TALK ABOUT THE THISTLE.

By MRS. A. KERR, Madison.

The classic Scotch Thistle, which stands upon the pages of history, poetry and romance, with the "rose" and the "shamrock," has too often been confounded with that common, ignoble weed, the Canada Thistle. To the unthinking and careless, a thistle is a thistle — nothing more. The individual is not distinguished from the species. This is a great humiliation no less to a plant than to a human being.

In one of the novels of Alphonse Karr, there is mentioned a young man who, reduced by poverty, is compelled to give music lessons. In a letter to his sister he confesses the great mortification he experiences to hear people say at his entrance, here comes the music-teacher — instead of saying, here comes Mr. Blank. He was no individual, he was a species.

Some feeling akin to this was aroused in the heart of a loyal Scott, when, during the session of the State Horticultural Society, in February last, at the capitol, his national flower was disrespectfully referred to as the thistle which all good and loyal citizens were bound by law to exterminate under penalty of a heavy fine. The Scotchman protested, but he had neither time nor opportunity to prove that

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his "warlike" flower was not the one condemned to wholesale destruction.

It is a great misfortune to labor under a bad reputation. Even when a good man comes from a neighborhood which has acquired an evil name, it is often necessary that some words be spoken in his vindication. Ever since the penalty for man's disobedience was pronounced, cursed is the ground for thy sake, thorns also and thistles shall it bring forth to thee, this plant has been "under the ban." However, centuries ago, exception was made in favor of a genus called by Linnaens the *enicus benedictus*, or the "blessed thistle," so named from its valuable medicinal qualities.

The thistle belongs to that most extensive of all the orders of the vegetable kingdom, the compositae, which comprehends about one ninth of all the species of flowering plants, yet which furnishes comparatively few useful products. A bitter principle pervades the whole, and we find that the herbalist, or herb-doctor, makes large collections from these plants, of which we may mention the chamomile colt's foot, thoroughwort, tansy and wormwood. Almost the only species used for food are the artichoke, the vegetable oyster, the dandelion, lettuce and a few others. But this order abounds in ornamental plants which are highly prized by the florist. Among these are Dahlias and Chinese Chrysanthema together with the numerous varieties of Aster, Helianthus and Coreopsis.

Botanists tell us that there are found in the United States about thirty species of thistles; two of this number are not native, but having been introduced, are more widely disseminated and have attracted more attention than the indigenous varieties. These two we shall describe.

The *cnicus arvensis*, known in Europe as the creeping thistle, is the one which we call the "Canada thistle." The English call it "cussed thistle." This plant which has followed civilization to nearly all parts of the world is said to have received the name by which it is known in this country from its having been introduced in the fleeces of sheep brought from Canada. It is justly regarded by our farmers as "the greatest pest of our fields." Its root is per-

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ennial, spreading rapidly and extensively by its creeping root stalks, which send to the surface numerous stems eighteen inches to three feet high. Its deep roots lie beneath the reach of the plough and even when the creeping root-stalk is broken it is exceedingly tenacious of life, every fragment being capable of forming a new plant. Besides, its abundant seeds are feathery and are easily blown anywhere and everywhere by the wind.

The Ohio Experimental Station, which is devoting much time and labor to the question of weeds, and their dissemination, gives as an item of last season's work, the counting of the seeds developed by plants of different species. On a single thistle plant of average size there were found 65,366 seeds.

The leaves of the Canada thistle are smooth above, somewhat woolly below, thickly beset with slender spines upon the margins. The heads are rather small, of a pale lilac color, on short peduncles. This is the weed for the extermination of which the legislature of the state of Wisconsin has created a new office — that of Commissioner of Canada Thistles, whose duty it shall be to serve notice in writing on the occupant of lands on which he shall find growing "weeds known as Canada thistles, burdock, teasel, white daisy and snap-dragon. If after six days' notice the occupant shall fail to destroy such weeds in such manner as shall effectually prevent them bearing seed, said Commissioner shall spend as many days as the supervisor or city council may deem necessary in destroying such weeds, and for each day so spent he shall receive one dollar and a half per day and one-half of all fines collected; said fines being five dollars for the first offense, and ten dollars for each offense thereafter." This act was approved April 3, 1885.

It would seem that in many localities the Commissioner might receive a lucrative salary and the state be greatly benefited.

The Scotch thistle, also called the spear-thistle (*cnicus lanceolátus*) is the most common of all the species. This is a large, strong plant; its stems in rich soil are from three to

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four feet high, and its spreading leaves give it a formidable appearance.

But it is very easily destroyed because, as its root is biennial there is no danger that it will retain possession of the soil. It is easily distinguished by its leaves, whose bases are prolonged downward upon the stem, described in botany as "decurrent." Unlike those of the Canada thistle they are prickly on the upper surface. The flowers are large and of a purple color, the most striking and showy of any thistle blossom known to us. These plants instead of being a curse to the soil in which they grow may even add to its fertility. A correspondent of the "Country Gentleman" says: Those who plow under large growths of daisy, sorrel, mayweed, and rag-weed hoping to make the soil rich, will be disappointed. "Out of nothing, nothing comes." Those weeds which take only from the surface soil can add nothing to its fertility. Thistles and other deep-rooted plants get something from the sub-soil and bring it to the surface. When thistles are kept down so thoroughly that their roots rot, they always leave the ground light and mellow. But it is as the national emblem of Scotland that the Spear-thistle has a peculiar interest. We, of the United States have no national flower. In common with other nations, we once adorned our brides with the orange wreath, and let the funeral cypress wave above our dead, but fashion is changing even these customs for there is a fashion in flowers as in everything else. We have *no* flower which is peculiarly our own. England has the rose; Germany, the blue cornflower (bachelor's button); Italy, the daisy; Switzerland, the elderweiss; France, the lily; Ireland, the shamrock (either wood-sorrel or white clover), and Scotland the thistle. In New England, however, the "trailing arbutus," there called the "May flower," is tenderly cherished.

Emerson writes: "Often from beneath the edge of a snow bank are seen rising the fragrant, pearly white or rose-colored crowded flowers of this earliest harbinger of spring. It abounds in the edges of woods about Plymouth, as elsewhere, and must have been the first flower to salute the

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storm-beaten crew of the May-flower on the conclusion of their first terrible winter. Their descendants have thence proudly derived its name." A more striking contrast to the thistle can hardly be found; yet each speaks to the heart its own peculiar language.

The legend of the Scotch Thistle has often been told. It varies in some particulars, but the following as given by a writer in an old Edinburgh journal, seems substantially correct:

In the reign of Malcolm I, about the year 1010, Scotland was invaded by the Danes, who made a descent on Aberdeenshire, and landed at Buchan-ness, intending to storm Slains Castle, a fortress of importance, situated close to the most eastern point of Scotland, and therefore convenient for the Danes at any time they might feel inclined to pay a hostile visit to their warlike neighbors.

The still and silent hour was selected as the most suitable time for commencing the attack, and as their presence was as little expected as desired, they flattered themselves they should without much trouble succeed in taking possession of the castle. Wisely determined, however, to leave nothing to chance, they took every precaution to make the necessary preparations complete. When all was ready and the night sufficiently far advanced to inspire them with a reasonable hope that the inmates of the castle were asleep, the word of command was given, and they commenced their march. Slowly and cautiously they advanced, taking off their shoes to prevent the possibility of their foot steps being heard. No voice broke the death-like silence — not a gleam of light illumined their onward path, save that one or two "sentinel stars kept their watch in the sky," as if to guide them to the castle. They now approached within a short distance of its lofty towers, and their hearts beat quick inj·oyous anticipation of a speedy victory. No sound was heard from within, not a light appeared in the windows — the inhabitants were evidently fast asleep.

Their labors are now well nigh over. They can scarcely refrain from exclamations of delight, for they have but to swim across the moat, and place the scaling ladders, and

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the castle is theirs. But in another moment, a cry from the invaders themselves, rouses the inmates to a sense of their danger; the guards fly to their post — the soldiers mount arms, and, quick as thought, pursue the now trembling Danes, who fly unresistingly before them. Whence arose this sudden change of affairs? From a very simple cause. It appears that the moat, instead of being filled with water as the Danes had expected, was, in reality, dried up, and overgrown with thistles, which pierced the unprotected feet of the assailants, who, tortured with pain, forgot their cautious silence, and uttered the cry, which of course had alarmed the sleeping inmates of the castle. Thus, then, we find that the unconscious thistle, somewhat like the geese at the Capitol (of Rome) was the means of preserving Scotland from falling into the hands of her enemies. In token of gratitude it was henceforth adopted as the national emblem and has ever since been held in the highest veneration by her hardy sons.

The poet Burns was too tender-hearted a man to make a good farmer. He wrote one of his sweetest poems in memory of a mountain daisy, the "wee, modest, crimson-tippet flou'r," which he inadvertently turned down with the plough and he confesses to sparing a stout thistle, on account of his regard for his country's flower.

In the language of flowers the thistle is the emblem of self-defense. The motto used by the Knights of the Thistle or the Order of St. Andrew, whose floral badge is the thistle, is peculiarly appropriate, "Nemo me impune lacessit"— *No one shall touch me with impunity;* or in plain Scotch: *Tak' tent how ye meddle wi' me.*

Thus we see that the Scotch Thistle —"the warlike flower, too rough to bloom in lady's bower," deserves to be held in honor, as the emblem of a brave and noble race whose stern adherence to duty has made Scotland "loved at home, revered abroad."

This paper was pleasantly discussed by Messrs. Wakefield, Rhodes and Smith.

It was said that the Canada thistle is an increasing evil

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in the state of Wisconsin, and we should spare no pains or trouble to check its progress. Mr. Toole thought that farmers would do well to see that those officers appointed by the state to see to the extermination of Canada thistles faithfully execute their duty. He thought the greatest danger would be from the thistles growing in out of the way places where no one would attend to them.

The Glee Club furnished more music, after which the following dispatch from the Minnesota State Horticultural Society was read by the secretary.

MINNEAPOLIS, June 25, 1885.

WISCONSIN HORTICULTURAL SOCIETY, Weyauwega.

The Minnesota Horticultural Society sends fraternal greeting. Fine show of fruit. Successful meeting. Members enthusiastic.

S. D. HILLMAN,
Secretary.

Messrs. Trelease and Hoxie were instructed by the president to reply to the telegram.

The paper by Mrs. Balch, on "Flowers from the Yard," was then read by Miss Balch.

FLOWERS IN THE YARD.

MRS. L. BERTHA BALCH, Weyauwega.

The practical man, so-called, is apt to regard as of value only those things which contribute to the support of the animal needs. Such a man is wont to regard flower culture as a waste both of time and money. In a company of men and women who have met to discuss the proper modes of fruit-culture it is not unfitting to ask this question: Of what practical value are flowers in the home?

Nothing that God has made is to be wholly condemned. Those things which God has given his special sanction are at least entitled to our consideration. How is it with the flowers? In our own state the snow is scarcely melted before the white and pink blossoms of the arbutus appear among the masses of brown and green. A little later the children come laden with hepaticas, buttercups and spring

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beauties. In the autumn the frost, and often the snow, comes before our flowers have faded. The asters and gentians linger until the fierce blasts of November send a shudder through the most rugged frame. Wadsworth says of the daisy:

"When soothed a while by milder airs
Thee winter in a garland wears
That thinly shades his few grey hairs,
Spring cannot shun thee;
Whole summer fields are thine by right;
And autumn, melancholy wight!
Doth in thy crimson head delight
When rains are on thee."

Even among the cultivated flowers are some scarcely less hardy than the daisy. In very truth the pansies are the first "hearts-ease" in the spring and the last in autumn.

Not in time only has God made flowers universal. They are found from north to south, from east to west. They appear on the mountain top and in the valley; on the dry and arid plain and on the surface of the quiet lake.

God has dignified the flowers forever by making them the symbols of His own loveliness.

"I am the Rose of Sharon and the Lily of the Valleys,"

Since God has thus freely given and honored the flowers it becomes man to be appreciative of them, and man has not been unmindful of his privilege and duty.

The songs of inspired men in God's own book are full of the beauty of the flowers. The most beautiful songs of the poets, uninspired, save by the silent influences of nature, are of the flowers. From Chaucer down the poets have vied with each other in paying tribute to the "wee, modest, crimson-tipped flower," which Burns has immortalized. Shakspere speaks in the mouth of the fairy Oberon:

"I know a bank whereon the wild thyme blows,
Where ox-lips and the nodding violet grows:
Quite overcanopied with lush-wood bine,
With sweet musk roses and with eglantine."

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Wadsworth has said:

"Pansies, lilies, king-cups, daisies,
Let them live upon their praises,
Long as there's a sun that sets,
Primroses will have their glory;
Long as there are violets
They will have their place in story."

Among poets and prose writers who have brightened their pages by allusions to the flower-world Shelley has most beautifully immortalized these gifts of God.

"The snowdrop and then the violet,
Arose from the ground with warm rain wet,
And their breath was mixed with fresh odor sent
From the turf, like the voice and the instrument,
Then the pied mud-flowers and the tulip all,
And narcissi, the fairest among them all,
Who gaze in their eyes in the stream's recess,
Till they die of their own sweet loveliness;
And the naiad-like lily of the vale,
Whose youth makes so fair and passion so pale,
That the light of its tremulous bells is seen
Through their pavilions of tender green;
And the hyancinth, purple and white and blue,
Which flung from its bells a sweet peal anew,
Of music, so delicate, soft and intense,
It was felt like an odor within the sense.

"And the wand-like lily, which lifted up,
As a Maenad, its moonlight colored cup,
Till the fiery star, which is in its eye,
Gazed through clear dew on the tender sky,
And the jessamine faint and the sweet tuberose,
The sweetest flower for scent that blows;
And all rare blossoms from every clime
Grew in that garden in perfect prime."

Honored by God, recognized and immortalized by earth's greatest men, flowers are worthy our consideration.

Every one knows that air is necessary to life, and the fresher the air the more vigorous the life. The professional man and the business man is sure to get some air, if only in going to and from his place of business. But the profes-

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sional's wife and the business man's wife, especially when in humbler circumstances, find time, only when necessity demands, to get a breath of the outside world. If this inducement for flower culture does not apply to the farmer's wife, others claim her attention. A small plot of ground, in the back yard of the city home or taken from the broad acres of the farm is sufficient for healthful, invigorating exercise. What if one does come in with muscles tired and aching; such exercise is just what is needed to call the blood into circulation and produce constant change in the tissues of the body. Of as much value as the exercise is the rest from care which comes in the open air among the flowers. One can forget for a moment that breakfast is to be prepared or that the season's sewing is crowding hard and it is the constant remembrance of such things as these that wears upon the nerves and dims the powers. Can anything be more inspiring for the day's duties than to cull the dewy flowers in the early morning? or more quieting and restful than to walk among the fragrant blossoms in the gathering twilight?

Strengthening and resting the physical powers, flowers are none the less helpful to the mental nature. Their very beauty gladdens and cheers the heart. Their intricate and delicate organization invites close observation, thus training the children of the home to note and watch for the wonderful manifestations of Nature. Their wonderful tints and colors charm the eye of the artist; and in no department of art is more taste required, than in making selections for, and in arranging beautiful combinations. If you would teach your children to love the beautiful and would cultivate their artistic natures, turn them loose among the flowers.

Did not the flowers teach us many lessons there would be no "language of flowers." The Sweet Alyssum and the Mignonette teach the attendance of merit upon humility. The snow drop, that the most unpretending are often those whose friendship remains most constant. The lily, recalling the beautiful words of Christ, inspire one to trust in a most loving Father.

Nothing in the world of Nature is more elevating and re-

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fining than flowers. The lovers of flowers are more apt than others to lead noble and upright lives. This is not strange, the beautiful coloring, the wonderful tints, incapable of being produced by any artist's colors; the delicate lining and veining, show the touch of the Master painter. The fine mechanism by which the fibres draw from the black earth food for growth, and coloring for beauty; the intricate construction not to be imitated in the most delicate wax, point to a Master builder.

If these things are so, the most potent influence for good, for elevating the thoughts and ennobling the life, outside of the personal influence of parents and friends, are to be found among the flowers. Ought they not, then, to be accorded a fitting place in the home-life?

Mrs. Rich and Miss Balch were then unanimously elected honorary members of the society.

A paper entitled "What the Flowers teach us?" was next read by Mrs. Campbell.

WHAT THE FLOWERS TEACH US.

By MRS. VIE H. CAMPBELL, Evansville.

If "order is Heaven's first law," then beauty is nature's, and scarcely any object is so distorted, and to first appearance so unsightly, that upon closer inspection reveals no graceful curve, delicate shading or unredeeming line of beauty.

Mother nature ever puts forth her efforts to clothe, and not only to clothe, but to adorn. Hills, valleys, jutting cliffs, craggy heights and haunts inaccessible to the footsteps of man, are alike recipients of her lavish beauty. Bold, irregular rocks and unsightly objects are covered with soft, velvety, creeping mosses, or hung with the drapery of beautiful clinging vines, rivaling in their delicate tints and airy forms the most carefully guarded treasures of the conservatory, or, with the many shaded lichens, are made to assume weird

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and fantastic shapes; while lofty heights, that tower Heavenward above the clouds, are covered with her beautiful mantle of eternal snow; and seemingly not content with her work she has placed at the height of 10,000 feet above the sea-level, a strange one-celled plant of a blood red color, which is reproduced with great rapidity on the snow covered spurs of the mountains, making a very brilliant contrast with the snow.

The earth denuded of its floral covering would be like a house without windows or apertures, through which the light of day could be admitted.

Could such a devastation be visited upon the earth no animal life could be long sustained, for the floral world holds the secret of health to a greater degree than is yet dreamed of in our philosophy. It makes the air we breathe pure and life-giving. Some of our most simple and common plants supply the atmosphere with its most active purifying agent — ozone.

Our forests, with their resinous odors, are endowed with gifts of healing, and he who breathes may be made whole.

That lessons may be learned from the flowers, may not be to every one apparent, but research show us that in every age and clime, and among all peoples, flowers have been held in reverence, used as symbols, made the object of superstitious ceremonies and incantations, and have been the theme of wonderful legends and traditions.

Every country has its plants and trees which are regarded with sanctity, an attribute which they have gained, no doubt, through patriotic association, simply because they are characteristic of the country; and to the stranger on foreign shores the sight of a tree or flower indigenous to the land of his birth, will cause his heart to thrill with joy even as at sight of his national colors. I once knew a rector, English born, who, on seeing an English primrose in bloom in a lady's conservatory, sat down and talked to it as he would have talked to an old friend.

The custom of symbolizing flowers is a very old one, and at the earliest period of the world the human heart felt flowers to be the natural symbols of gentle affections and noble

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aspirations. They have served as a theme of inspiration for poets in all ages. Long ago Cowley wrote:

"If we could open and unbind our eyes,
We all like Moses should espy,
E'en in a bush the radiant Deity."

He also originated the comparison of flowers with stars. Margaret Fuller said that, "The stars whisper all their secrets to the flowers, and if men only knew how to look around them they need not look above. The Scandinavians have a myth that the starry heavens represent a vast flower.

The bibles of all nations abound in allusions to fruits and flowers, and of all fruits the apple seems to have had the earliest, widest and most mythical history. The symbolism of flowers dates back to the earliest periods of which we have any record, and it is wonderful to read of the singular ideas which different flowers have suggested to the minds of the people of ancient nations. The special flower of the Hindoos has always been the marigold. The Chinese display the chrysanthemum for their national flower and show great skill in cultivating and training this flower to represent birds and animals. The Assyrians have for ages proudly claimed the water lily, and during the ages in which it has been held sacred it has been invested by poets with every variety of significance, and numerous have been the superstitions concerning it. It is said of our common lily, there was once a superstition among farmers that the number of white cups on the most flourishing stem they could find, denoted the number of shillings a bushel of wheat would bring that year.

Among the Romans the lily and the oak were the emblems of power.

Coming down to our own time, we find that the sacred days in the calendar of the English church have each a flower or plant emblem; the principal ones of which are the palm for Palm Sunday, the holly for Christmas and the amaranth for All Saints Day.

The days of the week are named from deities who had

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each his special flower; thus Sunday, the sun, to whom belonged the sunflower; Monday, the moon, the daisy; Tuesday, the violet; Wednesday, the blue monks-hood; Thursday, the burdock; Friday, the orchis, and Saturday, the equisetum — commonly known as the horse-tail.

The thistle is the national emblem of Scotland and was adopted by them as such, about the middle of the fifteenth century.

The shamrock, familiarly known to us as white clover, is the national emblem of Ireland, and claims an equal place in history with Scotland's thistle or England's rose which ever blooms on the royal coat-of-arms. The rose seems to be the favorite theme for fables in all countries. The Catholic rosary, called by the Germans Rosenkranz or rose wreath, suggests to us that at some time the worshippers counted their prayers with roses; certain it is that for a long time the larger beads were called roses.

The rose was acknowledged by the ancients to be the queen of flowers, although her reign is sometimes disputed by the lily, which is always a very queenly and graceful flower; and as they are each equally worthy of the title of queen, and are yet so different, we are tempted to give the rose a material dominion, while we accord to the lily a spiritual realm of eternal purity.

Very many plants which were held sacred to Norse goddesses, had their names changed by the early Christians to honor the Virgin Mary. The various species of the orchids which have hand-shaped roots are called Our Lady's hand and Mary's hand.

All plants which have "lady" in their names — lady's-smock, lady's-slipper and the like — were consecrated to the Virgin Mary, and many of the flowers so named are known to have had a pre-christian sanctity.

It is wonderful how the perfume of a tiny flower, wafted upon our senses, will defy the lapse of time and place us back a score or more of years and we see again the dear old home with its old familiar flowers that were so suggestive of sweetness and purity — even the long rows of stately hollyhocks seem hallowed to us now; and our pulses quicken

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with young life's throb as we live over again our youth, and listen once more to the sound of the dear voices that have long been hushed to our maternal ears. Those years, that, in our feverish haste to attain to maturity seemed so long, pass quickly before us now and in a few moments of time the perfume is gone, and the dream, too, is gone, and only a heartache remains.

It is said there is no person, however degraded and fallen but that there is some flower that hath the power of striking an inner chord and causing it to vibrate in harmony to a better nature. If it be true, ought we not to cousider it a sacred duty to scatter flowers with lavish hand to illume the pathway of our less fortunate, more sorely tempted brothers and sisters? I read not long ago of a man, convicted of a crime for which the law demanded his own life as the penalty, who steadily refused all approach of kindness, and seemed in every way a hardened criminal. Flowers were brought to his cell, but they shed their fragrance unheeded; one morning his keepers, on entering his cell, found him on his face in tears. Some one had carried to him a few sprays of mignonette. "It was my mother's favorite flower," said he, "and the sight of it and its fragrance carried me back to the time when I was a little boy at home with her—and to think I have come to this!" His whole manner seemed to be changed; he had been stirred by the influence of that simple flower to the depths of better, manly nature, and from that time, until his execution, he seemed a different man.

The cultivation of flowers seems to weave about us a magical spell, and many are the inspirations we receive therefrom. We are inspired to a better appreciation of order. I never knew a slip-shod person who cultivated flowers. I would like to make a strong appeal to women for a more general cultivation of flowers, because I believe in their humanizing influences, in the lessons which they teach and the sympathies to which they appeal. It is a labor which has a moral influence. The mother who loves flowers will soon interest her children and infuse them with the same feeling. A love of flowers is a love of the beautiful, is a love

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of the good, and thus we are led on step by step in the grand march of improvement. It always seems that one who cultivates flowers lives nearer Heaven, and it is said that flowers are the medium of communication for angels to mortals; the poet Willis alludes to this idea when he says—

"If 'tis not a true philosophy,
That the spirit when set free,
Still lingers about the olden home,
In the flower and the tree;
It is very strange that our pulses thrill
At the sight of a voicelss thing,
And our hearts yearn so with tenderness
In the beautiful time of Spring."

The cultivation of flowers leads us into the fairy realm of science, and a close observation of their habits teaches us to solve the wonderful problem of assimilation and growth. We learn how the microscopical protoplasm divides and multiplies itself continuously, and, aided by the sun waves, digests the food of the plant and transforms the water and gases into useful sap and juices, which in turn build up new cells until the plant has attained a sufficient degree of perfection to expand its floral treasure, and the wonderful process still goes on until it has perfected and matured its tiny plantlet enclosed in its own peculiar husk of protection, and then, its mission fulfilled, is gathered to the bosom of mother earth to enrich and sustain the new forms of life.

Tennyson says:

"Little flower, if I could understand
What you are, root and all, and all in all,
I should know what God and man is."

The question often arises, "why is it that nature has allowed such a host of enemies for every useful esculent, while the weeds are suffered to grow unmolested?" They seemingly have no foes and have such a tenacity of life and are propagated so much more readily, that we are led to wonder what hidden virtue, unknown to man, do these despised weeds possess that we are compelled to maintain a continual struggle, that we may not be hopelessly overwhelmed by them? One would almost think they were invested with a

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sort of sacredness to flourish as they do in spite of all obstacles. They never suffer blight from sun or shade, but are ever present to mock their enemies with their wicked luxuriance. Perhaps if we possessed the key with which to unlock Dame Nature's secrets, we should find that the weeds are more essential to the preservation of the life-giving properties of the soil than the most precious fruit or grain.

Ruskin says that "the grass teaches us humility and cheerfulness — its humility, in that it seems only created for the lowest service, appointed to be trodden on and fed upon; its cheerfulness, in that it seems to exult under all kinds of violence and suffering. You roll it, and it is stronger the next day; you mow it, and it multiplies its shorts as if it were grateful; you tread upon it, and it only sends up richer perfume."

The cactus is one of the members of the floral kingdom that would seem to teach us the quality of making the most of unfavorable conditions. These plants are found in the hottest and dryest portions of the country, are the John-the Baptists in the wilderness, preparing the way for future vegetation. Gaining a foothold upon the rocks and sand where naught else could grow, for the most part destitute of leaves, their places being supplied by thick, fleshy stems of grotesque figure and peculiar structure, armed with prickles and spines, and often attaining to a height of fifty or sixty feet, they form an impenetrable barrier, the sight of which is a terror to all animal life, and perfectly protects them from intruders that would otherwise trample and destroy them. From their succulent nature they are able to endure long drouths, and the decaying of this immense growth soon forms a soil for a more advanced form of vegetation, for which they have prepared the way. And who shall determine which is of the greater benefit to man — the plant that produces the soil or the plant which produces the grain? Fotwithstanding the rough exterior and unattractive appearance these plants present and despite their seemingly unfavorable conditions, many of them are remarkable for the superb beauty of their flowers. One who has been privileged to behold the flower of Cereus Grandiflorus has en-

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joyed a vision of beauty he will never forget, for it seems to possess a spiritual grace shared by no other flower.

It may not be known to every one that we have a plant, growing abundantly on our prairies, which unfailingly teaches the points of the compass. So strange has the peculiarity appeared concerning the characteristic of the Silphium, or rosin-weed as it is often called, that it was for many years discredited by scientists. Abundant observations have now confirmed these records, and some of our more familiar plants are known to exhibit this polarity — the edges of the leaves pointing north and south. If the common garden lettuce is allowed to go to seed, the leaves along the stalk, or stem, will be seen to point north and south; this peculiarity is not so strongly marked as in the Silphium, owing probably to a modification in the plant by long cultivation. Longfellow calls attention to the characteristic of the Silphium.

"———, that lifts its head from the meadow,
See how the leaves all point to the north, as true as the magnet,
It is the compass plant that the finger of God has suspended
Here on its fragile stalk to direct the travelers' journey,
Over the sea-like, pathless, limitless waste of the desert."

He has made the mistake, however, of calling a very robust plant a fragile one. It will be borne in mind that it is the long and peculiarly cut leaves which are borne in long stalks from the root that are the ones that constitue the compass. The leaves along the stem, which are small and well raised to the light, do not exhibit marked polarity.

Perhaps no flower presents so wide a field for study as the pansy, and none so world-widely popular. It has held its greatest reputation among those races of the east whose religions were of the emotional class. We find it the theme of Arabian song, in which the wealthy and ambitious were exhorted to learn humility from this lowly wayside preacher. Mohammet had a great fondness for it, consequently among his followers it is regarded with much sanctity.

Besides the name (pansy), so familiar to us all, it is sometimes called hearts-ease and herb-trinity. The Swedes give

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it the name of sommet or velvet flower. In Denmark it is called stemma; or step-mother's flower. The Danes have a quaint little story about this flower, in which they compare the keel of the flower to the second wife.

You will see, on examination, that the keel is covered with two sepals, which they say represents her share of the property; the wings are the children of the second wife; they have each one sepal, equal to one share apiece. The standard represents the children of the first wife, poor, motherless little ones, who have only one share between them. The arrangement of the flower — the lower petal called the keel, the two side ones the wings, and the two upper ones the standard, is in harmony with this queer version.

"In all places, then, and in all seasons,
Flowers expand their light and soul-like wings,
Teaching us, by most persuasive reasons,
How akin they are to human things.

"And with childlike, credulous affection,
We behold their tender buds expand,
Emblems of our own great resurrection,
Emblems of the bright and better land.

A general discussion on flowers now ensued. Mr. Kellogg encouraged the growing of flowers and vines in the yard and spoke at some length concerning roses.

The Glee Club again entertained the audience with a fine selection, after which the committee on Resolutions reported the following resolutions, which were unanimously passed by the convention:

Resolved, That we as a State Society, take just pride in the efforts and labors of the members of the Waupaca County Horticultural Society in propagating and bringing to notice such choice specimens of apples as the Wolf River and other varieties that we see on the tables to-day, some of which gave us as a state, great prominence at the New Orleans exhibit.

Resolved, That while it is the duty of our members to gather and disseminate useful information relating to horticulture, it should also be the duty of every man and woman who wish to make homes more home-like to encourage and second the efforts of the Society by aiding and adding to the stock of knowledge every fact relating to horticulture.

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Resolved, That the thanks of the State Society are due and are hereby tendered to the members of the Waupaca County Agricultural Society and to the citizens of Weyauwega for their hospitality and their very kind and cordial greetings to us and the friends of Horticulture.

Resolved, That the thanks of this convention are hereby tendered to the Weyauwega Glee Club, for their very fine music which has added much to the pleasures of this meeting.

Resolved, That we tender a vote of thanks to the Chicago and North-Western Ry., the Milwaukee and St. Paul, and the Wisconsin Central for their courtesy to us as a Society, in passing the members and others in attendance over their several lines of railways at reduced rates.

A few remarks were then made highly commending the music with which the exercises of the afternoon had been so pleasantly interspersed.

On motion of Mr. Wakefield the Waupaca County Horticultural society and the citizens of Weyauwega tendered their thanks to the state society for its presence.

An invitation to hold the next summer convention at Janesville was presented by Mr. Kellogg, but was deferred until the annual meeting.

President Smith — Since our last meeting death has removed one of our number. I refer to Mrs. Stickney of Wauwatosa; I would therefore appoint B. S. Hoxie, N. N. Palmer, and Mrs. Vie H. Campbell as a committee to prepare suitable resolutions of respect. The committee rendered the following report which was unanimously adopted:

IN MEMORIAM.

[redacted]

Mr. President and Members of the Wisconsin Horticultural Society:

Death, ever in our midst, has selected this time for his victim the wife of our old and much respected fellow worker, Mr. J. S. Stickney. For years Mrs. Stickney had been blind, depending upon an only son and a loving husband, with their love of home and the beautiful, as her guide for all. Some three years since an operation was performed which nearly restored her sight when she could see the home and all its surroundings which nature and art made more beautiful during all these years of darkness. The home was not long to be enjoyed, for the messenger came and the husband and son are left to mourn her loss, of wife and mother.

The plant of earth has only been transplanted to a fairer clime and more

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beautiful home, "For in my Father's house are many mansions." The beautiful of home and home life only fit us for the more beautiful in the hereafter. And while we recognize the fact that of the earth we are and must perish as the law of the universe demands, yet nature mourns at this seeming loss and transition; therefore

Resolved, That these resolutions be published in the transactions of our society and a copy sent to Mr. Stickney in token of respect.

B. S. HOXIE,
N. N. PALMER,
MRS. VIE H. CAMPBELL,
Committee.

A motion was made and carried that the expenses of the committee appointed to visit the original Wolf River orchard be paid by the society.

It was also moved by Mr. Trelease that a committee of three competent persons be appointed by the chair, to visit the orchard of Mr. A. G. Tuttle, and other similar orchards in the vicinity of Baraboo, and report on the condition and prospects of the Russian varieties on trial; such report to be made in writing at the next annual meeting of the society, and that the traveling expenses necessitated by this duty be paid by the society. The motion was carried, and G. P. Peffer, Daniel Huntley, and N. N. Palmer were appointed as such committee.

Motion was made and carried that such amount of money as may be necessary, be appropriated for the purpose of procuring the figures needed to illustrate the forthcoming annual report of the society.

After listening to more music by the Glee Club the society adjourned until the fall meeting, to be held at Madison during the State Fair.

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MEETING AT THE STATE FAIR.

MADISON, WIS., Sept. 10, 1885.

The meeting was called to order by President Smith, in the senate chamber.

Mr. Palmer, who was a member of the committee appointed at the Weyauwega meeting in June to examine into the condition of the Russian varieties of apples near Baraboo and Beaver Dam, was present and was called upon to present the report of the committee. He stated that the written report had been in the hands of Mr. Peffer, and as Mr. Peffer had left Madison for Ann Arbor, it would be impossible to present the written report to the meeting. Mr. Kellogg then called upon Mr. Palmer to give a verbal report of what he saw. Mr. Palmer stated that the committee had visited Mr. Tuttle's orchard and compared the Russian varieties with other varieties and the Russians had been found mostly in good condition. A few trees of these varieties had died and a few were fire blighted, but not badly. From what he saw and what he heard, Mr. Palmer would judge that there were about fifteen varieties of the Russians that would prove very desirable. So many of the Russian varieties were so nearly alike that not over fifteen would be desirable to cultivate. About fifteen varieties were bearing. The committee also visited the orchard of Mr. Townsend. This orchard was situated in a pocket where every thing would be most severely tried. The Haas, Plumb Cider and other standard varieties had been injured in this orchard. The committee also went to Beaver Dam and found the Russians in substantially the same condition at that place.

In reply to a question, Mr. Palmer stated that the fifteen varieties of which he had spoken were all of them as hardy as the Duchess of Oldenburg. At the time the committee inspected these varieties it was the opinion of Mr. Peffer

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that a number would be more at home and more thrifty still farther north. Out of the varieties spoken of, three or four were winter and early winter apples. Of the winter varieties there were the Antonovka and Hibernal, Golden White and Yellow Transparent. Mr. Palmer had himself had some experience in growing the latter variety. The Longfield was also one of the prominent varieties examined. This variety Mr. Palmer thought to be as hardy as the Duchess. Some trees of the Russian varieties were seen in Mr. Tuttle's orchard that were killed. In answer to a question Mr. Palmer stated that he saw only two or three varieties of the Russian that he would consider not hardy. He thought that about seventy-five different varieties had been examined. The Yellow Transparent is considered by Mr. Palmer as the best apple we have. It has stood the test in places very trying to the successful growth of apples, and is a good bearer. A good many trees of this variety fruit at an age of three or four years. Mr. Palmer had first received from Mr. Tuttle a little tree of this variety, which was grafted into a Famuese tree. The next year there were fourteen apples which all hung on the tree until they were ripe. The year following this there was a yield of nearly half a bushel. Mr. Kellogg made an inquiry with regard to the width of the pocket or gap in which the orchard was located. Mr. Palmer thought the gap was about ten rods wide. The older varieties were planted on the ridge next to the hollow. The soil on which the Russians were was mucky, and in their location they were greatly exposed to the heat of the sun. The location of the Russian varieties was by no means a favorable one. The trees were all apparently healthy with the exception of a few that showed fire blight. The White Astrachan showed the effect of the winter as also did the Fameuse, Fall Orange and Plumb Cider, while in the vicinity one Duchess had been killed. The question was now passed over without further discussion.

The President suggested that it would be well to consider the question of the winter exhibition. A motion was made and seconded that the annual meeting be held in February. Mr. Kellogg thought that Madison did not properly appreciate

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the efforts of the society and he was of the opinion that the society had better meet elsewhere. He was in favor of leaving the matter of winter exhibition entirely to the executive committee. Mr. Kellogg moved as a substitute to the original motion, that the matter be referred to a committee. He thought that full confidence should be had in the committee. He was in favor of helping local societies throughout the state, by meeting with them. The motion was then carried

A motion made by Mr. Kellogg, providing that delegates to adjoining state horticultural conventions should be appointed by the President, was next carried.

Mr. Phillips was opposed to the discharge of the committee on Russian varieties of apples. In his judgment, the report of the committee was unsatisfactory and he was in favor of giving the committee more time in which to make a more thorough examination of the subject and report more fully. He had expected that the report would be read again at this meeting. Mr. Palmer stated that he was greatly disappointed at the absence of the report. On their way to Baraboo the committee had called at the *Farmer* office and had agreed to furnish that paper with a report of their examination. At the last moment, Mr. Peffer had explained that he had not finished this report until late the night before coming to Madison to attend the State Fair. Mr. Palmer had not himself seen the report, but was satisfied that he and Mr. Peffer had reached the same conclusions. Mr. Tuttle said that he had not expected that the committee would report through the papers. A motion was carried to continue the committee, requiring from it a full and complete report at the winter meeting.

President Smith — I would suggest that provision be made for an exhibit of Russian varieties of apples at the winter meeting, and that a description of the trees on which the apples are borne should accompany the specimens. Mr. Phillips thought it was the duty of the committee to attend to matters of this kind; but President Smith was of the opinion that the committee would be reluctant to take such a step unless they felt that it would be upheld by the society, and for this reason was in favor of instructing the committee.

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The discussion now turned for some time upon the relative merits of several different varieties of apples. Mr. Kellogg thought it would be well for the apple-growers of Wisconsin to devote themselves to growing such apples as the Duchess, and others that have withstood the test. Mr. Tuttle was confident that the Antonovka was the best apple we have. This apple is at its best in May. The Repka will keep until June. The Hibernal will keep until February with proper care. The Hibernal is without doubt a good deal hardier than the Duchess. The tree in the possession of Mr. Tuttle is loaded as full as any Duchess tree he ever had. The Hibernal is equal to the Duchess in its eating qualities. Mr. Hatch, of Ithaca, was called upon to report as to the condition of orchards in his vicinity. He reported all old orchards as swept clear of everything except Duchess and Tetofski. The Longfield was hurt somewhat, but other Russian varieties were uninjured. Part of the Golden Russets came through in good shape; but Mr. Hatch lost about half of his trees of this kind. The Ben Davis are gone entirely. About one-fourth of the Fameuse were destroyed. The remaining three-fourths were injured somewhat but will recover.

Mr. Potter, of ————, was also called upon. He said he could nct make a report that would be favorable to the growing of apples. In his section the Duchess and Walbridge had done best. His orchard is situated on a north slope north of a belt of timber. The Walbridge trees planted there are nine years old and are grown from grafts. Thirty rods from this grove the Red Astrakhan. He has no Russian varieties except the Duchess and Tetofski. The orchards further to the south, Mr. Potter reported as not so badly injured. Mr. Jeffries planted quite a number of the Walbridge variety about two years ago, as did also quite a number of his neighbors. Before this year the trees had not borne but were doing well this year, and the trees have borne some very nice apples.

A motion to adjourn was now carried.

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SEPTEMBER 11, 1885.

The object of this meeting this evening was to have a talk with Mr. Gibbs, of Canada, with reference to Russian varieties of apples.

Mr. Kellogg suggested that the report of the committee appointed to investigate this subject had better be read in order to open the question. The following report of the committee was then read by Secretary Trelease:

To the Secretary of the Wisconsin State Horticultural Society:

SIR: — According to appointment by the State Horticultural Society at the summer meeting held at Weyauwega, the committee on Russian varieties of apples met at Baraboo on July 22d; Mr. N. N. Palmer and the undersigned constituting the same, as Mr. Huntley had sent a letter regretting that he could not attend on account of their County Horticultural meeting on the same date, he being their secretary.

I left home on the early train, calculating to connect at Madison with the Northwestern train and be there in the morning, but did not arrive until afternoon. We found Messrs. Palmer and Tuttle waiting at the depot, and straightway made for Mr. A. G. Tuttle's orchards. His old one around his house is badly used up, as is his second one which is some twelve years old, and the third one six or seven years old. In the second orchard they were mostly what we used to call "ironclads," but many of them were badly damaged or killed, except those that were of Northern or Russian origin, and were more favorably located. In his third orchard, we found only Duchess and Utter, about 200 trees, half and half. The Utter are nearly all killed; the Duchess are nearly all good and full of fruit. I said "*nearly all*," because in the lowest part of the orchard a few Duchess looked damaged. They had small leaves, no fruit, and were sick. Whether the same cause that killed the Utter was affecting the Duchess we did not ascertain. A heavy June grass sod was around the sick Duchess trees. Whether that had starved the roots or whether the trees were full of sap from late growth, we do not know. It seemed that the Utter trees had been damaged from the latter cause, as the bark was loose on the bodies of them. In the fourth orchard, some four or five years old, there are some eighty varieties of the so-called Russians, and most of them are in good, healthy condition, but had very little fruit, except the early varieties, such as Tetofski, White Transparent, Raspberry, Duchess and the like. Your committee could only judge of the trees by their appearance and foliage as there was but little fruit on any of them except those mentioned, and those seemed to be the best bearers. But we were told that this is the off-year, as last year most of them were heavily loaded. This orchard had been set out among his nursery trees, or *vice versa*, in regular form. A part of the nursery trees were removed last year, and the remainder last

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spring. Many of these orchard trees looked rather stunted, especially where the clearing up was done last spring, but no blight was visible on them. Those trees that had had a year's good cultivation looked more thrifty, but some varieties showed blight. No dead or loose bark, however, was seen on them, as was the case with the Utter trees in orchard No. 3, and with some of the older trees. Now here is a query. Did the nursery trees help to protect them, or lack of cultivation prevent a late growth last fall, or are they really a hardier race?

The next morning we started early and visited Mr. George Townsend's orchard. His is in a well centered spot, timbered on two sides, and descending to the east or northeast so that the southwest and west winds cannot do much harm. On his highest ground is his older orchard and here there are yet left some good trees of the so-called iron-clads, such as the Wealthy, Duchess, Walbridge, Pewaukee, Clark's Orange, Utter, Fameuse, Plumb's Cider, and Fall Orange. Of the Haas trees some are damaged and some are dead. Mr. Townsend's latest planting of some fifty to seventy varieties of Russian sorts seem to all to be in a healthy condition, some of them having a good show of fruit, although they seem to have been planted in this orchard only four or five years. We saw several other orchards in this vicinity, but all the Russian sorts seem not to have been affected by last winter's cold, while orchards of other varieties of the same age and planting were injured more or less.

In the afternoon we were taken by team to Kilbourn City by our friend Mr. Tuttle. We visited several different orchards located at various points and invariably found the Duchess, Tetofski, and Siberian crabs full of fruit, while other varieties were nearly all dead or so badly injured that they had scarcely a leaf or fruit on them. We reached Kilbourn City at sundown and stayed over night, taking the early morning train for Beaver Dam to see the orchard of our old friend Mr. C. Perry. This orchard contains some fifty-six varieties, most of which have been fruited, some of the trees being twelve or fourteen years old. Mr. Perry sent us eighteen varieties to take to New Orleans last winter, but they got too far from home, and all of them rotted and fell to pieces before the committee came to inspect them. They were apparently not winter apples for the south. Russia made an exhibit at New Orleans of about ten varieties of apples; they were small and much inferior to those from Minnesota and northern Wisconsin, and of course lost their flavor. Those from the states were good compared with them. Longfield, Hibernal, "Zusoff's" winter are passable in quality, and the Alexander and Duchess may be included, as we had them there in good condition for several weeks.

Mr. Perry's trees were not all in an orchard, but in a long nursery row; and although his trees looked sick, the wood was not colored. But they are going or are gone, and there will be no more fruit on his old trees Last winter was too long. There was much snow about the trees and some grass that had not been cut and removed, and so the mice got at the

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trees and girdled some of them so badly that the injury cannot be repaired. Those that are not girdled had but little fruit, as it was not the bearing year with them. Mr. Perry's young trees of these varieties, however, look well with the exception that the top ends of the new wood in one or two varieties was colored for a few inches. This was also the case with the young trees of the same varieties in the orchard of Mr. A. G. Tuttle, at Baraboo.

We asked these various orchardists many questions, but one in particular: "What varieties are worthy and profitable to raise?" In the judgment of Mr. C. Perry the best varieties were: Longfield, Yellow or White Transparent, Hibernal, Good Peasant, Cross, Vasilis Largest, Anisette, Sweet Pickty, "Turnipy Juicy," Watermelon.

Geo. Townsend's list was as follows: Hibernal, Vasilis Largest, Antanovka, White Russett, Golden White, Muscat, Zoltoriffs, Longfield, Raspberry, Yellow Transparent.

A. G. Tuttle's list was: Longfield, Hibernal, Golden White, White Transparent, Repka, Anis, Red, Zoltoriffs, Anisette, Lord, Antonovka.

J. L. Budd's list: Antonovka, Arabka, Bogdanoff, Bohemian Girl, Grandmother, Longfield, Cross, Stiklianka, Romiskos, Yellow Transparent.

During the reading of the above report, Mr. Tuttle was asked if he could explain the cause of the damage to the Duchess varieties, which question Mr. Tuttle answered at some length.

After the reading of the report Mr. Gibb was called upon to give an outline of what he saw as to apples in Russia. Mr. Gibb advised the society to follow out the plan adopted by him a couple of years ago, of getting lists from those who had fruited Russian varieties. He thought the society would be able to get information of this nature from Wisconsin and Minnesota in time to be of service in tree planting next spring. Secretary Trelease agreed to have drawings made of typical specimens of the varieties listed. Mr. Peffer thought that in getting these lists, descriptions of the manner and place of growing the trees should also be required. Then these reports should be submitted to some competent man, like Mr. Gibb, for revision. In this manner, the use of two or more names for the same variety would be avoided.

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The following resolution offered by Mr. Palmer was adopted:

Resolved, That the secretary order from Prof. Budd a selection of recommended Russian plums, cherries and pears to an extent not exceeding $50, to be distributed to such members of the society as may apply for them, and will agree to carefully test and report on the same, for the benefit of Wisconsin horticulture, said members to purchase from the society at actual cost.

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TRANSACTIONS AT THE ANNUAL MEETING AT MADISON, FEBRUARY 1-4, 1886.

CAPITOL, February, 1, 1886.

The society met at 7:30 P. M., President J. M. Smith in the chair. H. C. Adams, of Madison, was elected Secretary *pro tem.*

Truman M. Smith, president of the State Horticultural Society of Minnesota, and H. E. Van Deman, of Kansas, were made honorary members of the society.

Mr. Hatch — I move that a committee of three be appointed for the purpose of re-districting the state with regard to the fruiting of various kinds of fruit. Although I make the motion, I would prefer not to be appointed on the committee.

Mr. Kellogg — I will second the motion if the president will put Mr. Hatch on the committee.

The motion was carried and the president stated that the committee would be appointed in due time.

Mr. Plumb asked if there had been any committee on programme appointed. The president stated that no such committee had been appointed, and said that the programme was already made out.

Mr. Plumb — We have a skeleton of a programme, but it will need a great deal of filling out. I would move that a committee for that purpose be appointed. Mr. Kellogg has usually been the chairman of such committee, and I would suggest that he be made chairman of this one.

Mr. Kellogg — I will second the motion if Mr. Plumb is made chairman of the committee.

The motion was carried and the president stated that he would announce the committee in a few moments.

The president suggested that it would be necessary to appoint in some manner a committee on award of premiums. Mr. Adams stated that it had been the general custom for

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the exhibitors to agree upon such a committee among themselves, and the matter was left to them.

Mr. Kellogg — I see by the programme that the president's address comes after the election of officers. It does not say whether the address is to be by the old or the new president.

President Smith — The old president will not be the president after the election.

Mr. Adams — I would suggest to exhibitors that they be ready to make their entries as early as possible in the morning.

The president appointed the following gentlemen as a programme committee: J. C. Plumb, G. J. Kellogg, and H. C. Adams.

Mr. Hatch — The present time would be a suitable one in which to talk over the future action of the society.

President Smith — Mr. Hatch's suggestion is a very good one, but perhaps I should first make an explanation as to why the programme appears as it is here. A few weeks ago I received a letter from President Arnold of the State Agricultural Society, proposing a joint convention of the two societies. He said that he had written to Secretary Babbitt of the proposed arrangement, and sent me a copy of the letter written to Mr. Babbitt. I wrote that the arrangement was very satisfactory to me, and that I would co-operate with him on the basis proposed. I also forwarded President Arnold's letter to Secretary Trelease, and thought Secretary Babbitt was to co-operate with Professor Trelease in getting up the programme. I wrote to Mr. Babbitt, telling him that I had written to Prof. Trelease. I thought that I would do the best I could to make the convention a success. I expected Mr. Babbitt to call on me for anything I could do to aid him. I made no comment on Mr. Arnold's proposition except to accept it. A short time since I learned that Mr. Babbitt was very angry at me and said that I had insulted him. When the programme came out, which was at a late date, it came in the form in which you see it. These are the facts in the case, gentlemen.

Secretary Adams — I should like to hear from the gentlemen present from other states as to the strength and meth-

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ods of their respective state horticultural societies. Mr. Van Deman can probably tell us something about the Kansas society.

Mr. Van Deman — I wish to thank the society for having made me an honorary member. I certainly do feel honored. Although here under directions of the agricultural department of the United States, I shall certainly gladly comply with the request for information as to the workings of the horticultural society in my own state or in other states. I have been a member of the Kansas society for sixteen years. Our society has been from the first an organized body distinct from the agricultural society. The agricultural society is a board composed of members from the agricultural societies all over the state. These members meet from time to time to elect officers. In our state also there was some friction between the state agricultural board and our horticultural society. The agricultural society seemed to want to hitch the horticultural society to their society as a sort of a tail to their kite. We were allowed to publish only just what they wanted to let us publish. There was a provision that the reports of the two societies should be published together in one volume. In the face of all opposition, we went before the legislature and asked for an appropriation for carrying on our society. By this we got entirely independent of them. I perhaps do not know exactly the condition of your society, but in our society we have found it better to be entirely independent of the agricultural society. I do not know as to whether I have answered all the questions that you would like to have answered or not. Our society is much stronger now than before its separation from the agricultural society. We pay our secretary $1,200 a year, but pay no premiums. We hold two conventions each year. Tne annual convention meets in December and hold a semi-annual meeting in June. Our election of officers occurs biennially. We have fruit exhibits but for show merely, and we offer no premiums. Our annual meetings and elections are held at any place we think suitable. We avoid the state capital everytime, however. We have held but two meetings there within sixteen years. There is too

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much going on at the capital and there is no local attendance. Very few attend from the locality of the capital except those who are interested in horticulture. Our membership is about two hundred and fifty. We get $2,500 a year from the state besides the publication of our transactions. Until within the last two years the cost of publication has been paid from fund outside of any appropriation by the state. This amount is expended in payment of the salary of the secretary and in paying the expenses of the officers. These expenses are almost wholly those incurred in getting to and from the place of meeting. The secretary gives all his time to the work of the society. He edits the volume containing the reports of the society. Our report is a volume of about three hundred and fifty pages. The secretary also attends local meetings throughout the state very frequently. We have standing committees to investigate certain lines of work and report on them. The workings of our society are very much like those of the Iowa society. The Iowa society has twelve districts within the state, but we do not have so many and in that respect Iowa is ahead of us. Other than that our society is very similar to that of Iowa.

President Smith — If there is no objection, I will call upon Mr. Smith of Minnesota.

Mr. Smith — Our society is independent of the agricultural society. We were established and had our reports printed long before that society. In fact they have not had their reports printed yet. We have 5,000 copies of our reports printed. A large proportion of them, however, are distributed among the members of the legislature, county societies, and libraries of the state. We get an appropriation of $1,000 a year. We have a general fruit committee to report on the districting of the state. We have twelve or fifteen experimental stations. These stations are furnished by the society with whatever they wish. If there is not enough of anything to go around, the experimental stations are furnished first, and from them other parties are then supplied. The officers of these stations are appointed by our society, and are paid from our own funds. The professors in our state university are not assistants in this line of experimental

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work. They have always acted with us but are not really connected with the society. The third week in December we hold a four days' session. For the last six or eight years we have also held summer conventions. The local societies of the state report to us in order to receive copies of our reports. Their reports are also printed with ours. The officers of our society attend local meetings whenever they can. We pay our secretary $400 a year. We have five vice-presidents. I should not be in favor of having our horticultural society connected with the agricultural society. Our state agricultural board is composed of three delegates from each local society throughout the state. Under a late law our horticultural society was entitled to four delegates on this board. Last year we were allowed only three, however. We have some life members in the agricultural society. Our fee for admission is one dollar and our membership is about 160. We co-operate with other societies of the northwest and have sent delegates to the meetings of the Wisconsin and Iowa societies. We also exchange reports wherever we can, with Montreal, with Colorado, Massachusetts and other states. We endeavor to get into our library all the information that we can get from all sources. The line of work of our experimental stations is in the way of testing scions, etc. We have offered a large premium for a hardy apple.

Mr. Kellogg — How long are the tests of such apples to be?

Mr. Smith — For five years.

Mr. Kellogg — Not enough.

Mr. Palmer — The last five years would have been enough.

Mr. Smith — We used to have the horticultural department of our state fair under our charge entirely. For the last two years this has been refused us and there now seems to be an opinion among our members that the state fair management must allow us premiums for exhibits and must also allow us to make the premium list. Our meetings have been held lately alternately in St. Paul and Minneapolis. We meet at St. Paul in the winter of the legislative sessions and at Minneapolis in the alternate winters. Of late we

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have had a better attendance when our meetings were held at St. Paul. We have also held an exhibition of two days in June, at which we pay small premiums. Next summer we are to meet on the University farm and look it over to see what they are doing there. Everybody in Minnesota and the adjoining states are invited by Professor Porter, to be present.

President Smith — Does that mean us?

Mr. Smith — It means you. You will find that the University farm means more than it did a few years ago. Then, our professors did blackboard farming. I was called upon to make a speech there a few years ago, and felt very much out of place, being the only green thing in the room. I was glad no animals were around. Since then the farm has made great improvements. The original University farm was 120 acres of sand and bog. Experiments were attempted on it, but nothing would grow. It was nothing but sand and quagmire. Professor Porter said buy a piece of land and sell this. Finally they did empower him to sell the sand and buy land. The land he sold had cost $8,000. He bought land which is now worth $165,000 and he claims to have the best barn and farm-house in the United States. It was bought and paid for out of that sand bank and there are $30,000 to come from it yet. It has not cost the state a dollar. It is all due to Professor Porter. Yet, some papers are working against him.

President Smith — Perhaps we had better close discussion in this direction now. I should like to say that I think President Arnold has taken all the steps that he can to make this convention agreeable.

Secretary Adams — I never knew of a child that became strong before it began to walk alone. It seems absurd that our society should lean upon the Agricultural Society. That society stands upon its own feet and is doing a practical and valuable work for the people. If this society is to obtain strength it can do so only by standing on its own feet. We do not need to ask anything from the other society. Let it go on with its work as it has done, and the Horticultural Society should do the same thing precisely. There are

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thousands in the state who are becoming interested in horticulture and things related to horticulture. Now, if we work by ourselves we can build up an organization which will be a credit to the state. We must work independently and make the best we can of ourselves. According to law we have to hold our February meeting here. This we cannot get around. No vote would relieve us from that necessity. In order to bring the matter fairly before the society I move that we have a winter meeting for the exhibition of fruits, and that the time and place of such meeting be left to the executive committee.

Mr. Hatch — I am in favor of having an independent society. We have work in which the Agricultural Society can not co-operate. We have two different fields to occupy. I have a substitute for the motion made by Mr. Adams. I would move that all meetings of the society shall hereafter be independent of the meetings of other societies. In order to give the greatest possible freedom in our meetings it would be well to hold our elections whenever we shall see fit. We can arrange that next winter, however, when the legislature meets again. We had better make arrangements of some nature, so that we may be free to do as we wish, and so that it would not be necessary for us to come here to Madison. It would not be more difficult to get the laws repealed which requires us to meet at Madison than it would be to have other things done. Let us be independent of any laws; that we may go where we may deem it our duty. There would be no trouble in having the matter arranged at the next legislative session. The Dairymen's Society does not come here to elect its officers.

Mr. Plumb — I think the remarks that have been made are very pertinent, but I do not see the matter in the same light. I do not think that for many years we have had absolute connection with the Agricultural Society, except by common consent. This matter of the present disagreement between the two societies is a purely personal one, between our president and the secretary of the Agricultural Society. We should simply provide for the future. The

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first thing to do is to express our desire for an amendment of our organic law, such as will leave to the society the settlement of the place and time of its meetings. Every attempt for six years back to affiliate with the Agricultural Society has been without result owing to their secretary. I believe it would be for the interest of our society if the meetings should be held more in connection with local societies. The original resolution would cut us off from local societies also. I want to say a word right here about the Iowa society. It has seemed to me for a long time that the Wisconsin Horticultural Society should take its proper position before the state. A gentleman said to me on the way up: "What is there in the way of your society making progress?" I said simply this: "We have asked but little and have got but little." It is said that there is no organization that stands as high before the state of Iowa as does the horticultural society of the state. I doubt if there is any body of men who could be met in that state who would carry more weight than the horticultural society. They have done their work faithfully and well. They are seeking larger fields of work. Our society can do the same thing if we get properly about it.

Mr. Phillips — I am quite in agreement with Mr. Plumb. We have needed for twenty years to have this organic law changed. We fail to get in any new members, but from year to year about twenty of the old wheel-horses meet here in Madison.

President Smith — We nearly doubled our membership last year.

Mr. Phillips — I have thought for twenty years that we have needed to have our meetings away from the capitol. Richland Center in order to get the meeting of the dairymen at that place, offered to get many new names as members of the society. It was so at Arcadia also. That is the object of farmers' institutes, to create an interest in the public at large. Our society should have a committee to correspond with different parts of the state as to matters relating to meetings, etc. In Minnesota they see to it that the persons who come to the meetings are attended to.

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Mr. Tuttle — This law of organization has always been opposed to my opinions. Our most interesting meetings now are our summer meetings. I believe that it is an injury both for the agricultural and horticultural societies to meet together. Mr. Babbitt is not to blame. There are others behind him who cause him to act as he does. I do not want to talk before men who do not want to hear me. Our summer meetings are very interesting and are generally better attended than those held in Madison. But in our winter meetings we have never brought about any good.

President Smith asked Mr. Springer of Waupaca county to report as to the feeling created by the meeting held at Weyauwega last summer.

Mr. Springer — I can only say that it did us all a great deal of good.

Mr. Tuttle — There is no reason why we should not come here to elect officers and go somewhere else to hold our discussions.

Mr. Van Deman — If the society should clear itself of this compulsory law, there would be no need for meeting here for election of officers. Officers cannot successfully be elected when there are only just a few who can attend the winter meetings. In our state we hold our meetings all over the state. They circulate all around, and in this manner interest is awakened in the work of the society. Our members are always entertained free of all charge and are met at the depot and transferred all over the city free of charge. We generally have offers from year to year to meet at various places, and it has always been so since I have been in the state.

I should just like to say one more thing. In our society we have county vice-presidents who report annually. All local organizations are allowed two delegates in our conventions.

Mr. Kellogg — I would move that we append as an amendment to the motion to hold the meetings of the Horticultural Society "independently of all other meetings," a clause excepting local organizations.

Mr. Hatch — I think if the word "management" is used

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it will be all right. We can make out our programme and the Agricultural Society can make out theirs. We need only to have the management separate and independent. The resolution offered by Mr. Hatch was now changed, so that it read as follows:

Resolved, That the meetings of this society shall be held hereafter under its own management.

This idea of meeting together has grown up only through the usual custom, but Mr. Hatch thought the society should take the action expressed by the resolution, so that the president should know just what to do about the matter. The resolution was adopted.

Professor Seymour read some communications from Edward D. Holton, Professor Budd and others.

Professor Smith — The gentlemen who were present last fall remember the resolution that was passed at that time with reference to the purchase of scions and cuttings from Prof. Budd for distribution among the members. I thought that so much change would have to be made in the order that I did not feel like sending it.

A motion was made and carried that the chair should appoint all standing committees.

President Smith — It has been customary at our winter meetings to take early action as to the place of our summer meeting. Perhaps it would be as well for us to decide upon this now as at any other time.

Mr. Kellogg — I made some little effort before leaving home in regard to ascertaining the sentiment as to inviting the Horticultural Society to hold its next summer meeting in June at Janesville. I thought it best, in view of your former reception at our place, to make some arrangements before inviting you. I can cordially invite you to meet with us next June and see the show of strawberries at that time. We shall be able to make a good show and shall provide free entertainment for all who come to the meeting.

Mr. Roe — I wish to invite the Society to meet at Oshkosh. There are enough citizens of the city who will most heartily open their homes to all who come to us. We need something of the kind to awaken interest in the fruit that we

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propose to raise there. There have been meetings of this Society at all other places and it has dodged us every time. It would seem that in bare justice, provided the invitation is made in good faith, we should be recognized as in existence as a city and locality worthy of recognition.

President Smith — I would say to Mr. Roe, that is the first time the Society has ever received an invitation from Oshkosh.

Mr. Hatch — Before the vote is taken let us have in all the returns. Let us simply entertain the motion to accept Mr. Kellogg's invitation. Let us have the best thing we can get.

President Smith — I have never refused to do any work put upon me while president of this society, and should not if re-elected, but with regard to holding two conventions during one summer, I have noticed that where it has been done the meetings have not been successful.

Mr. Van Deman — I should like to say that in our state, we decide at the time of our annual meeting on the place of our next meeting.

Mr. Kellogg — I think it would be better to leave the place of our next meeting to the executive board. They could tell better at a later date, closer to the time of meeting, as to whether a place would be suitable or not. The question might depend on the weather within a few weeks of the time of meeting.

Mr. Plumb — I think Rock county needs some missionary work. I know of twenty-five or thirty of my town people who would go down to attend the meeting if held at Janesville.

Mr. Hatch — My notion is just this. This invitation should be held as a bait for other societies to try for.

Mr. Plumb — In Iowa there was recently a warm strife concerning the place of next meeting. The two places, Hampton and Charles City, both wanted the meeting. The convention came near deciding to go over into Illinois to hold their meeting, but Charles City finally won, because it was near to Wisconsin. They want Wisconsin men to go over there to attend their meetings.

Mr. Roe — Pardon me, gentlemen, for urging my claims.

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We have at Oshkosh a large fruit growing interest, in the line of strawberries, raspberries, grapes and blackberries, almost as large as at any other part of the state. We have felt grieved that the society has not taken interest enough in us to come and visit us. It is true we have not taken such steps as we should. The horticulturists in our region are feeling sore over the action of the Northern Fair. Unless we receive such recognition as we should get from that fair, we will go alone and form a county horticultural society. This work, which is now before us, would receive stimulation from the presence of this society with us. It would be a great aid to us if it could be held out that our brothers of the State Horticultural Society, men who are known all over the state, would come to us. It would be of excellent effect in the work that we have laid out for ourselves. You all know something of the business energy of our men, and you may be assured that like energy will be shown in the arrangements for the summer meeting.

Mr. Plumb — I believe that every word that Mr. Roe has spoken of the Oshkosh people is true. I move that these invitations simply be entertained and that they be settled upon by the executive committee.

President Smith — I would much prefer that the society take some decisive action concerning them. The executive committee is scattered all over the state and cannot meet readily; and so when you leave the question to the executive committee you practically leave it to the president whoever he may be. The society might leave the question for settlement until some other day of this meeting. I should much prefer that the society take some decisive step rather than leave it in this way.

Secretary Adams — I move that consideration of this question be postponed until 3 o'clock to-morrow afternoon. The motion was carried.

Mr. Kellogg — Gentlemen, we have with us one who has been one of the pioneers and veterans in horticulture in the northwest, but whom I have never before met in a convention. I move that F. K. Phoenix be elected an honorary

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member of this society and be allowed to ptrticipate in our discussions.

The motion was unanimously carried.

Mr. Phoenix—Gentlemen, I am really very much delighted and flattered with this reception. It seems to me that I am very unworthy of such an honor. If I can do anything to advance the interests of the society, I am anxious to do it, and would be very willing to sit and listen and look on. I have to say further, that I am astonished and delighted that we are beginning to show our independence in the matter of holding our meetings by ourselves and under our own management.

Professor Seymour — I wish to speak of a plan for increasing the membership of the society. The publishers of the *Michigan Horticulturist,* which you all know to be an excellent publication, offer to send their paper to all who become new members of your society, at the reduced price of seventy-five cents per year, while the regular price is one dollar a year. The society might send out circulars to such as they think would be interested in this offer. The publishers would like to have us look up the matter. It certainly cannot hurt us and it may help us materially in increasing our membership.

Mr. Kellogg's motion that the proposition be accepted was not acted upon, and the meeting now adjourned to meet again at nine o'clock to-morrow morning.

MORNING SESSION.

TUESDAY, February 2d, 1886.

The meeting was called to order at nine o'clock.

It was decided that reports of the committee on Observation should be received before revision of the fruit list.

A committeee was appointed to revise the premium list, with the instruction that the amount of the premiums should not exceed the amount paid last year. The committee consisted of Messrs. Hatch, Kellogg and Hirschinger.

President J. M. Smith then read the following annual address:

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ADDRESS OF PRESIDENT SMITH.

Another year with its joys and sorrows has passed away. In more respects than one, it has been one of unusual care and anxiety to the lovers of horticulture, not only in our own state, but throughout the entire northwest. The apple crop of 1884 was probably the finest ever grown in the state, and the exhibition of the samples of our fruit at New Orleans could not but make our citizens feel proud of our state, and many of us fondly hoped that a new and prosperous era was dawning upon those of us who are interested in horticultural pursuits. But it seems that at least one more disaster awaited us. Orchards had doubtless been somewhat weakened by their heavy crop during the season of 1884, and were not in as good a condition to endure hardships as if the crop had only been a moderate one. The winter of 1884 and 1885 was one of almost unprecedented length and severity. When the spring at last came, the complaint of dead or damaged fruit trees was almost universal.

The question has been asked of me over and over again, what shall we do? One gentleman of long experience residing in the western part of the state, said to me not long since: "You must give us something better." I need not say that this is something we are all of us very anxious to do, and really hope and trust that we are upon the eve, at last, if not upon the dawn, of a brighter day. I cannot but trust and believe that between the many varieties of new Russians, and new seedlings, we shall find a few varieties that wil endure our most severe winter with perfect impunity. And yet the experience of many years bids us be very careful about what we recommend.

There has been one peculiarity about the damage done to orchards that I can hardly account for. In the district that I in part represent, the damage, so far as I can learn, has been less than in any other portion of the state. In fact, I do not recollect ever seeing finer crops of Duchess than were grown in Brown county last season. Golden Russett and Fameuse also did reasonably well. In fact, but few of

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our orchards are seriously damaged, while crabs were so plenty that they were a complete drug upon the market, although we have the great lumber and iron districts just north of us where almost nothing is grown; yet with all this advantage they could not be sold. While due west of us, in St. Croix and other counties adjoining, I am told that the destruction is almost complete, including even the Duchess and many of the crabs.

Why should there be such a vast difference? The thermometer was but little lower there than in Green Bay. The winter in other respects was about the same. Why should the damage be comparatively light in the one district, and the destruction about complete in the other? There is certainly a cause for this. Let us face the facts in this, as well as in other cases, and if possible ascertain the cause first, after which it will be much easier to apply the remedy.

No premiums have as yet been paid upon exhibitions in our class at the international exhibition held in New Orleans last winter; and from what I can learn there is but little if any prospect of there ever being paid.

Some, or perhaps all of you may have noticed that a number of premiums upon apples are awarded to myself, some, if I mistake not, to Mr. Peffer and perhaps to Mr. Springer.

An explanation is due you in this respect. There was some doubt about how far societies could compete for the list of premiums offered. I wrote to Superintendent Earl about it, and he replied to me in writing, admitting us to compete for the entire list with two or three exceptions. After our fruit was nearly if not all set up, another decision was made by the authorities there, ruling us out of the entire list with the exception of some two or three entries. After a consultation with Mr. Earl (who by the way I do not think was to blame) I withdrew all the society entries, except the few about which there could be no dispute, and entered the most of them in my own name, some I think in Mr. Peffer's, and perhaps a few in Mr. Springer's name. Should the awards or any portion of them that appear in my name ever be paid, the money shall be immediately turned over to the treasurer of our society.

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There has been, in spite of all of our efforts to the contrary, some little friction growing out of our connection with the annual convention held in this city. Some of our number have for years believed that it would be better for both the State Agricultural Society as well as for our own, that we should act entirely independent of each other. President Arnold has expressed his wish to me that we should hold a joint convention, and I do not consider him in any way to blame for the differences that have occurred between the two societies. You have all of you doubtless noticed that we have crowded halls whenever our conventions are held outside of Madison. The reverse is apt to be the case when held in Madison. The question whether some radical changes in this respect would not be beneficial to us, is one that it would be well for us to carefully consider.

You are doubtless aware that tree peddlers are already peddling so-called Russians in all directions. Would it not be well to insert in our fruit list a word of warning, or some resolution in this respect that might be of benefit to those who will look with unusual interest for our next volume of transactions. While many of us firmly believe and all of us hope that we have some valuable varieties, as well as perfectly hardy ones, none of us expect them to be of permanent, lasting value.

Last season was probably about as unprofitable a one for the small fruit growers of the northwest as has been witnessed for many years. The acreage was large, and in most places the crop fnlly up to, if not above, the average. Business was depressed and times generally hard. The result was generally not a favoroble one to the growers. Among the new varieties that come with each succeeding year, many of which I have been trying, I have found the Manchester to be of value thus far, and am now testing it upon a more extended scale, and if it does as well next season as it has for the last two, I shall let it divide honors in my garden with the Wilson. I have kept a few of the Kentucky plants for some years in order to lengthen out the season, but the Manchester is about as late and in all respects preferable.

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The following I expect to plow under next season as unworthy of further cultivation: Kentucky, Sharpless, Piper's Seedling, Glendale, James Vick, Windsor Chief, Bidwell, and perhaps some others. I use the term unworthy here in a comparative sense. If I could get no better ones I should certainly keep some of them; but as compared with the Wilson or Manchester upon my grounds, they are unworthy of longer trial. If the Cuthbert raspberry does as well with others as it has with me, it is indeed a prize. It was five weeks last season from the day that we picked the first box until we picked the last ones. I have regretted that I did not keep a strict account of the yield, but am safe in saying that it was very large. The berries were large and firm and of excellent quality. The Gregg is the best of the black caps that I have tried, although its bearing season is not more than half as long as that of the Cuthbert. My grapes are upon a light, sandy loam with a very sandy subsoil. My Concords do not do nearly as well as they do upon the heavy clay loam of one of my neighbors. In fact I feel confident that I can raise more pounds of Delaware upon a given area of that soil than of the Concord. We picked twenty-seven pounds of Delawares from one small vine last fall. Some of the larger vines doubtless had more, although they were not measured or weighed.

The general result of my last season's work was only a repetition of the old, old story that it is only the good varieties, and then good cultivation, that pays during such years of depression as the last few have been. In fact, this may be said of almost all of the last ten or fifteen years.

To most of our members the year has been one of health and comfort if not of prosperity; yet one of our number has left us and joined the great and silent majority beyond our sight. I refer to Mr. J. Suydam, of Green Bay. He was but slightly known to most of you, and perhaps not at all known to some of our number. To myself he has for many years been an elder brother and a confidential friend. He was a dear lover of horticulture in all of its different branches. For years he had been the vice president of our home society, and never tired of doing anything and everything that

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tended to advance his interests. He was a ready writer and often employed his pen in behalf of our cause. Perhaps he had not the brilliant intellect of our Mrs. Lewis, whom we all so deeply mourned one year since, and whom none of us will forget while memory last, yet in its honest, earnest christian life he was, in my opinion, the equal of any of those whose names have ever adorned our list of membership.

It seems to me that during the years since you first honored me by placing me in my present position, we have been unusually exempt from deaths, or extreme illness among our members, still, it is well for us to bear in mind that it will not always continue. One by one we shall lay down the work, and our voices be heard no more in the friendly greetings that have been so many and so pleasant among us. Then let us work on while we may, and do so with kind and pleasant feeling, for each other. When we differ, as we often do, let us do so with no unkindness toward those who differ with us. Rather let us work that at the end we may each of us receive from the Good Father over all, the welcome that we doubt not has already been awarded to our friends of whom we were speaking: "Well done, good and faithful servants."

SECRETARY'S REPORT.

Professor Seymour read the report of Secretary Trelease.

The past year has not been without importance for the State Horticultural Society. At the time of our last annual meeting a partial report on our successes at the New Orleans Exposition was made, and is complimented by other reports, published in the last volume of transactions. But just as the society appeared to have reason to congratulate Wisconsin as being an apple-growing state, the discovery was made that our orchards have largely succumbed to the protracted cold of a severe winter. From the first, the Society has been conservative, testing new or untried fruits liberally, recommending them cautiously. Many doubtless believed that we have a fairly satisfactory list of iron-clad

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apples; perhaps it is as well that we are undeceived now, as that the realization of the truth should come later, since we were mistaken.

From the wrecks of old orchards will be saved a small percentage of truly hardy varieties. With these as a basis, new orchards must be constructed. Let our fruit list be cut down to a statement of what we know to be hardy and then re-constructed on new experience.

Two ways of effecting this, offer themselves. Originating and propagating seedlings of merit adapted to our climate is not only possible but imperatively necessary if our state is to be what we fondly hoped for it only a year ago. This is not work for the novice or dilettante. While an indiscriminate process of raising seedlings has resulted in the Wealthy, and may bear still better fruit, it cannot be disputed that the man who leaves success to chance is likely to find himself doomed to disappointment after a life of expectant and laborious work. The principles of cross-fertilization as it is understood and practiced by the most successful hybridizers should be understood and acted upon by the orchardist who hopes for success; even then he must expect many disappointments, and must be content to see many years consumed in faithful work before it can be proved by its fruits. I do not doubt that some of our choicest apples will be produced in just this way.

The other method of securing hardy varieties is by profiting by the work and disappointment of old world orchardists, who have long contended with climatic conditions similar to those that prevail in this part of America. Parts of Russia present these pretty nearly, and their best apples will soon be widely disseminated for trial in the Mississippi valley, through the efforts of Professor Budd, of the Iowa Agricultural College. While we are waiting for his importations to bear, we should not forget that the national government long ago imported many of these same varieties, and many worthless ones with them. These "Government Russians" are now fruiting. Many of them have been well tested in our state, and the society should not fail to give due credit to both importer and propagator. That their names are

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often erroneous or wrongly applied, is a serious obstacle to a proper understanding of Russian varieties. Nevertheless the genial and hearty co-operation of Messrs. Gibb and Budd in rightly naming them as they come into bearing can be counted on, and I look for a speedy confidence in the best of these apples.

Testing new or doubtful fruit is an important duty of this society, but to do this properly the society should be provided with adequate nurseries and orchard sites in different parts of the state. This involves more expense than might at first sight appear. Not only must the first cost of the land be met and improvements made, but competent nurserymen would be required for each, beside a thoroughly informed and able superintendent for the whole. Although the legislature, on the recommendation of Governor Rusk, has inincreased the appropriation for the support of the Horticultural Society, it is far too small to permit of this work being undertaken. The course open to the society in the future as in the past, is for its members to conduct individual experiments and report on them for the common good, cheerfully bearing the unavoidable disappointments that are sure to come. That the Agricultural Experiment Station may some day be able to undertake this task in a large way is not impossible; if so, it should be able to count on the hearty cooperation of this society.

Let me again urge on the members of the society the necessity for a proper room for its small library, and the desirability of adding to this. A small sum each year, judiciously expended, will in time, build a valuable pomological library, useful not only to our own members but to the horticulturists of other states. When the opportunity offers, an instructive museum is to be formed—the foundation is already laid in a small collection of fruit-models. Concerted action is necessary if these plans are to be carried out, and the members of the society should not shrink the responsibility and labor involved.

In closing, permit me to thank the society for the confidence and courtesy that have been uniformly extended to me during my connection with it in the capacity of secretary, and

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to express the regret with which I am forced to sever my official connection. Whenever I can be of use in the work of the society I shall deem it a pleasure to do whatever lies in my power, and shall always be happy to be commanded.

Respectfully submitted,
WILLIAM TRELEASE,
Secretary.

REPORT OF THE TREASURER.

WISCONSIN STATE HORTICULTURAL SOCIETY IN ACCOUNT WITH M. ANDERSON, TREASURER, DR.

Jan. 15, 1885,	To voucher No. 23	$6 25
Jan. 23, 1885,	To voucher No. 24	12 25
Feb. 2, 1885,	To voucher No. 25	8 24
Feb. 4, 1885,	To voucher No. 26	11 00
Feb. 4, 1885,	To voucher No. 27	69 00
Feb 4, 1885,	To voucher No. 28	6 50
Feb. 4, 1885,	To voucher No. 29	25 00
Feb. 5, 1885,	To voucher No. 30	1 00
Feb. 5, 1885,	To voucher No. 31	10 00
Feb. 5, 1885,	To voucher No. 32	6 66
Feb. 6, 1885,	To voucher No. 33	7 50
Feb. 7, 1885,	To voucher No. 34	1 10
Mar. 11, 1885,	To voucher No. 35	25 00
Mar. 27, 1885,	To voucher No. 36	8 00
Apr. 9, 1885,	To voucher No. 37	5 00
Apr. 11, 1885,	To voucher No. 38	27 75
May 1, 1885,	To voucher No. 39	50 00
May 1, 1885,	To voucher No. 40	7 10
May 15, 1885,	To voucher No. 41	12 50
June 25, 1885,	To voucher No. 42	6 95
June 25, 1885,	To voucher No. 43	22 60
June 25, 1885,	To voucher No. 44	11 40
June 25, 1885,	To voucher No. 45	5 95
June 25, 1885,	To voucher No. 46	20 44
June 25, 1885,	To voucher No. 47	12 22
June 25, 1885,	To voucher No. 48	13 80
June 25, 1885,	To voucher No. 49	10 22
June 25, 1885,	To voucher No. 50	23 00
June 25, 1885,	To voucher No. 51	11 40
June 25, 1885,	To voucher No. 52	3 60
June 25, 1885,	To voucher No. 53	2 75
June 25, 1885,	To voucher No. 54	72 00
June 25, 1885,	To voucher No. 55	10 97
June 25, 1885,	To voucher No. 56	11 58
June 25, 1885,	To voucher No. 57	22 80
June 25, 1885,	To voucher No. 58	15 80
June 25, 1885,	To voucher No. 59	4 00
June 25, 1885,	To voucher No. 60	7 00
July 1, 1885,	To voucher No. 61	7 14

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July 21, 1885,	To voucher No. 62	$8 40
July 21, 1885,	To voucher No. 63	12 90
Aug. 15, 1885,	To voucher No. 64	11 42
Aug. 20, 1885,	To voucher No. 65	5 75
Aug. 20, 1885,	To voucher No. 66	50 00
Aug. 20, 1885,	To voucher No. 67	25 63
Aug. 20, 1885,	To voucher No. 68	1 45
Aug. 20, 1885,	To voucher No. 69	1 50
Sept. 29, 1885,	To voucher No. 70	12 75
Sept. 29, 1885,	To voucher No. 71	16 60
Sept. 29, 1885,	To voucher No. 72	8 75
Oct. 3, 1885,	To voucher No. 73	14 16
Oct. 8, 1885,	To voucher No. 74	2 28
Oct. 8, 1885,	To voucher No. 75	25 50
Oct. 9, 1885,	To voucher No. 76	1 50
Oct. 31, 1885,	To voucher No 77	3 15
Dec. 7, 1885,	To voucher No. 78	100 00
Jan. 5, 1886,	To cash sent J. C. Plumb for expenses to Iowa Horticultural Society	22 00
Jan. 17, 1886,	To voucher No. 79	9 50
Jan. 27, 1886,	To voucher No. 80	3 00
	February 1, 1886, balance in treasury	283 11
		$1,216 82

WISCONSIN STATE HORTICULTURAL SOCIETY IN ACCOUNT WITH M. ANDERSON, TREASURER, CR.

Jan. 3, 1885,	By balance in Treasury	$131 82
Feb. 10, 1885,	By membership dues from Secretary Trelease	34 50
Mar. 11, 1885,	By order of President Smith on state treasury	500 00
Apr. 29, 1885,	By membership dues from Secretary Trelease	26 50
June 25, 1885,	By membership dues from E. L. Bennett, Weyawega	1 00
July 21, 1885,	By membership dues from Secretary Trelease	17 00
Sept. 10, 1885,	By membership dues from C. A. Hatch by Secretary Trelease	1 00
Sept. 10, 1885,	By order of President Smith on state treasury	500 00
Nov. 5, 1885,	By dues from members by Secretary Trelease	4 00
Jan. 17, 1886,	By dues from Wm. Trelease	1 00
		$1,216 82

Which was referred to the committee on finance.

President Smith — I have taken the liberty to appoint two committees, one on nomenclature consisting of Messrs. Plumb, Peffer and Floyd, and one on fruits and seedlings, consisting of Messrs. Tuttle, Springer and Roe.

Mr. Plumb — Our treasurer reports that he has received a dollar from Prof. Trelease in payment of his membership fee for this year. He will probably continue to send his dollar every year, but we should avoid any chance of losing him, and should fasten him to us. He has been a very useful man to us, and one of our most instructive and beneficial

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lecturers, and no doubt will do us a great deal of good in the future although no longer in our state. I move that Professor Trelease be made an honorary life member of our society. The motion was carried without a dissenting vote, and the secretary was instructed to make a record of the action and transmit intelligence of it to Professor Trelease.

The next order of business taken up was the reading of the reports of the committees on observation, it having been thought best that this order should precede the revision of fruit list. The district reports were called for in order and Mr. Kellogg read the report for the first congressional district.

REPORT OF OBSERVATIONS OF 1885.

By GEORGE J. KELLOGG, Janesville, Wis.

Mr. President — The severity of the winter of 1884–5 has passed into history as the coldest for fifty years; its demoralizing effects in the horticultural field have blinded us with the flying splinters of desolation and ruin. Our pets are dead and must be buried, why did they die? It was not so much the severity of the winter as other combined causes; the overburden of fruit for two seasons followed by three hard winters in succession; the last of which not much more severe than the two preceding but its effects much more apparent because of the great heat of September and October of 1884.

September, 1884, there were twenty nights the thermometer did not fall below 50 to 69 degrees, and for the entire thirty days it ranged from 50 to 89, while October followed with nine nights 50 to 67, and twenty-two days 50 to 82. This long continued heat after the growing season caused the flow of sap upward, and in many instances producing apple blossoms in September and October, with the first hard freezing October 23d and 24th, ice forming ¼ to ½ inch in thickness, caused the deathly chill that blighted our hopes and killed our trees.

The combined influences may not again occur for 50 years, and although we should avoid planting anything half hardy,

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yet our best kinds that have paid for themselves over and over again, will pay to plant on the best locations and with more care in their treatment, avoiding late cultivation, malformation of tops, which should always be free from crotches, having a central leader, and all branches standing out at nearly right angles, and not nearer than six to twelve inches of each other; these crotches by the retention of dampness and ice and snow often form the starting point of disease, while the same varieties if they had been properly pruned would have been alive to-day. Many orchards are planted on low land and southern slopes. These are the worst places that can be selected. Plant on high ground, timber ridges, northern and eastern slopes, with clay subsoil, avoid sand and gravel knolls, give proper treatment, and when your orchard comes to bearing do not starve it to death as too many have done in the past. Keep up its fertility by annual mulch of manure in the fall and a top dressing of ashes in the spring and summer and many of our old tried varieties will yet pay to plant.

How many of those who have lost heavily in orchard trees but can trace some of the causes to seeding with June grass, depredations by mice, pruning by cattle, rubbing by hogs, barked by the sheep, injured in cultivating, half killed in transplanting, black hearted and friendless, no wonder they died.

The varieties that have suffered least of apples bearing size during the past three years in southern and central Wisconsin are in about the order named: Duchess of Oldenburg, Tetofski, Alexander, Haas, Talman Sweet, St. Lawrence, Wealthy, Plumb's Cider, Sweet Pear, Fameuse, Red Astrachan, Golden Russet, and Willow Twig. McMahon is claimed to be as hardy as Duchess. Wolf River, I think is about the same in hardiness with Wealthy. Neither of these three have borne heavy crops enough to be thoroughly tested in a variety of locations in southern Wisconsin.

The best varieties of any kinds of fruits to plant are those that are succeeding best on soil and location *like your own in your own vicinity;* failing to find what you want, these lists will be some guide to success.

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Of the new Russians but few have fruited in my district, nearly all seem as hardy as Duchess, the only cause for fear is the tendency to blight, which may be avoided by setting on good locations and giving only a moderate growth. I have full confidence that among those now on trial there are but few but will pay to plant, and many of them that will take the place of those old varieties that have failed, giving us a succession of apples of good size, good quality, as hardy as Duchess and nearly as productive.

PEARS.

The most profitable are those varieties that never leave out; there are occasionally trees of Flemish Beauty that have paid for planting. Soil and location have all the credit. Kniffer has made many promises when only two feet high and will doubtless pay to plant, but don't believe it is blight proof, neither is it as good as it looks. Le Conte is about as tender as the peach.

PLUMS.

Nothing yet has fruited as well with me as De Soto. I expect as good things of Forest Garden, both of which I have secured from the parent trees on their own roots, these I consider better for general planting than grafted on plum; for small gardens I should prefer those grafted on peach roots.

Grapes have been a comparative failure for the last three years. Frosts September 7th, 8th and 9th, of 1883, caught a heavy burden of fruit too green to be of any value. May 16th and 29th, of 1884, formed ice sufficient to destroy all hope of any grapes, and May 7th, 8th and 9th, of 1885, gave us ice as thick as window glass and froze our grapes again. With disease to right of us, insects to left of us, and frost before and behind, what show is there in raising grapes? Varieties most reliable are Moore's Early, Worden and Concord for black, Brighton and Delavan for red, Lady and Elvira for white, Janesville and Oporto for Arbors.

Niagara has been planted by many, but it has not yet shown much fruit. There are seven hundred vines at Rich-

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land Center, now two years planted, to which we look for some reliable report.

There are a few instances of success in grape raising the past season. One vineyard of Concords, five miles south of Fort Atkinson, produced wagon loads of well ripened fruit. I have not learned whether its location or methods of treatment were the cause of success.

The cherry crop was not half enough for the birds.

I have omitted to state the condition of the apple crop the past season. In some locations there was more than a usual crop; in other orchards in the same town of same varieties, not one-twentieth of a crop. In some orchards with good crops almost free from codling moth, while others with large crops two-thirds of all were ruined by codling moth and curculios, the apple curculio seems to prefer Whitney No. 20, Duchess, Red Astrachan and Willow Twig to all else on my grounds, although no kind is exempt.

The wonderful yield of crab-apples in every location surprised every one, and after the first shipments could not be given away. Shipments before September 10th, in Chicago market netted from $2.00 to $2.25 per barrel. After that some shippers had to pay the freight and cartage to dump them in the river. Thousands of bushels rotted in the ground for want of cider mills to work them into vinegar.

My apple crop was most plentiful for years, but the curculio nearly ruined it. Those varieties fruiting most largely were Duchess, Red Astrachan, Willow Twig, Golden Russet, St. Lawrence, Lowell, Sweet Pear, Haas, Alexander, Fameuse, Talman Sweet, and all varieties of crabs, many breaking beneath the weight of fruit. I have had hopes of heading off the curculio by poison, but Prof. Forbes, State Entomologist of Illinois, as reported in *Prairie Farmer* of December 19th, made extensive trials by spraying with Paris Green, 1½ ounces to 4 gallons of water, eight applications from June 9th to September 3d. Also with London Purple in double the quantity, and lime dust in larger quantities. He examined 16,529 specimens, and gives the per cent. of injured fruit, and concludes: "That under the most unfavorable circumstances Paris Green will save *to ripening* at a

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probable expense of ten cents per tree, seven-tenths of the apples which must otherwise be conceded to the *codling moth;* that London Purple will apparently save about one-fifth, and that lime will save none; and that all these applications are without effect on the apple and plum curculios in the apple orchard."

The strawberry crop was only about medium. The unusually heavy shipments from the south made prices rule low. Home grown in good condition, bringing from seven to ten cents per quart at wholesale, while berries shipped in crates sold at three to six cents wholesale. I noticed large quantities of Crescent, that must have been shipped at least five hundred miles, coming in fair condition. The most profitable varieties with me are Crescent and Countess, Wilson and Windsor Chief, Miner's Great Prolific and Manchester, Daniel Boone and Longfellow; while Vick and Piper, if kept in narrow rows and highly fertilized, will pay. I have many new kinds I have already discarded, and many more that will show for themselves this season.

Black raspberries were badly injured by the winter and gave but about one-half a crop; best of the blacks, Tyler, Sonhegan and Gregg.

New plantations of reds were less injured by the winter than those two years old of the same varieties side by side. The most hardy of all reds, Turner, which is every way worthy and among the earliest. Brandywine and Cuthbert need protection when the thermometer falls to 20° below zero. Hansell, Superb and Marlboro are promising but tender; Crimson Beauty is a humbug; Caroline, a promising yellow, though tender. The above reds and yellow all sucker badly and are not as good for small gardens as Philadelphia, Purple Cane and Shaffer's Colossal, this last is tender after the first fruiting.

Blackberries unprotected were killed to the ground, all kinds alike.

I found quite a loss occurring by leaving a plantation of Snyder too long covered in the spring, the buds had started and taking them up just before a cold night, the first buds were badly injured, and I would recommend that they be

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uncovered as soon as fruit is out in spring, and I am not sure but this is best for grapes. Most hardy, Snyder and Stone's Hardy; most profitable, Ancient Briton.

Easiest covered, the Dewberry, but that is not profitable unless given high culture.

The currant has been driven from the market by the currant-worm. Many are again planting and I have no word of commendation of the new varieties; a partial trial of Fay's is not satisfactory.

Gooseberries are unprofitable to raise and less profitable to sell.

Smith's, Downing and Cluster are more desirable than Houghton.

I cannot close these imperfect notes of observation without again referring to the combined causes that have ruined so many orchards throughout our state. The winter of 1884–5 was not so cold as the two preceding winters, at least the thermometer did not register so low by 3° as in 1883–4 or 6° in 1882–3. The winter of 1874–5, gave 47 days at zero and below, aggregating 742° below; the coldest day, February 7th, 36° below. 1880–1, 52 days below=606° below; January 10th being the coldest, 35° below. 1882–3, 47 days below=597° below; January 21st being the coldest 36° below. 1883–4, 33 days below=371° below; January 6th being the coldest, 33° below. 1884–5, 52 days below=669° below; January 22d and 28th being the coldest, 30° below.

Of the five winters given, 1874–5 was the coldest, and January, 19 days below zero; February, 16 days below zero, that winter and *this was the coldest month in twenty years.* 1884–5 comes next in the aggregate though not as cold by 6° any day. The long continued cold spells may have something to do with the killing.

January, 1883, had 20 days in succession at 0. and below, save 2. January, 1885, had 17 days in succession at 0. and below, save 2, and February 14 days in succession at 0. and below. It will surprise many of you to notice the variations of the thermometer that hangs on the south side of the house in the sun—at sunrise, January 24th 1883, it marked 15°

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below zero, while during the day it marked 66° above, while the thermometer in the shade only reached 7° above.

The condition of the stock and orchards when winter overtakes us is the key note to disaster and ruin. If the growth has been healthy and well ripened up, no ordinary winter will kill our old tried varieties. If the fall induces a late growth, and the trees have been exhausted by overbearings and starvation, and located on low ground, with wet feet and when the sun pours down with a variation of seventy-five degrees in twenty-four hours in winter, no wonder they die.

SUPPLEMENTAL REPORT — FIRST DISTRICT.

Observation notes from Walworth and lake shore counties, district No. 1.

I find in Walworth county a slight influence of the temperature of Lake Michigan and also of the lakes within the county and less inclination to scab on the apple. Varieties succeeding: Red Astrachan, Duchess, St. Lawrence, Fall Orange, Alexander, Fameuse, Roman Stem, Golden Russet and many others. An abundant yield of crabs and plums, strawberries a paying crop. The rust appearing most on light soils and on plantations not protected by winter mulch.

In Kenosha county, six miles back of Lake Michigan, I found R. I. Greenings, E. Spitzenburg, Baldwin, Yellow Bellflower, Northern Spy, Green Sweet, Winter Swaar, Jonathan, and many now of the half hardy and tender sorts of apples giving abundant harvest year after year — although age and neglect are thinning out some of the orchards of these kinds that have passed through many winters with the thermometer at 25° to 30° below zero. I think the loss of trees in the lake shore belt is due as much to age, overbearing and neglect as to our recent hard winters.

I found where Greenings, Baldwins, Jonathan, and other choice apples were sold in the orchards at $1.00 per barrel, and the early varieties, such as Duchess, St. Lawrence and others, could scarcely be given away.

Insects are making sad havoc, and no remedy as yet for the curculios, except by jarring and catching.

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I found a large acreage of strawberries along the lake shore cities, who ship almost their entire pick by boat and rail to the Chicago market; the influence of the lake making their season a little later than the Michigan crop — giving them better prices than more inland cultivators.

Respectfully,

GEO. J. KELLOGG.

After the reading of this report it was noticed that Prof. Armsby was present, and as his time is very much occupied it was thought best to take advantage of his presence and ask him a few questions at least, relating to the establishment of horticultural experiment stations. The regular work was interrupted in order to take up this question. It was decided to allow thirty minutes for the discussion and presentation of this topic. To open the question he desired five minutes in which to present a short paper prepared by him on the subject.

Mr. Hatch — Gentlemen, I have made no preparation to present my views except in a colloquial way which, although it may not be pleasing to you, I hope will retain your close attention. I hope I can lead your minds in the direction in which I think. In my opinion there is a great desirability of establishing horticultural stations. This is shown in the question of meteorology. It is generally considered that the air of Wisconsin is dryer than that of Michigan. Mr. Hatch spoke of what he considered a variance between the actual truth and the prevailing opinions. He used the instance of meteorology simply to show that there were in the study of that science many possibilities of discovering the truths underlying such horticultural questions as the apple-scab, winter-killing, etc. If we had a central experiment station under the charge of a good scientific man, all these puzzling problems could be worked out for us. Such stations should be under the control of a man who is a practical horticulturist and an amateur scientist. We hear a great deal of talk about nitrates and phosphates, but what do we *know* about them? If the Fameuse will grow on one soil and not on another there is some solution of the

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question, which lies very near to science. Science must step in and help us.

What shall we do to avoid the mistakes, if mistakes they are, that we make in planting. A gentleman said to me on the cars: "Can't you tell us what to *do* to avoid fungus? We don't care for the science of it." I said that science was very complicated, and the very commonest processes are not ordinarily understood. It has been known from the very earliest times how to make mortar, but there are very few masons who understand the philosophy of it. It is better that men should know the philosophy of a process. Shall we know the empirical rules or the philosophy of a process? Are Professor Armsby and Professor Seymour so situated that we can get at them to ask them to find out about these things? If they are not it ought to be arranged so that they should come nearer to us. At a recent dairymen's convention, the members were told by a scientist how to get good results just as certainly as the sun shines. If we can get such science to bear upon our occupation, we shall be able to know how to raise good apples. God bless the professor who shall help us to attain this end. Until we have got such men, this society has a duty unperformed. We should at once take the preliminary step looking toward the establishment of horticultural experiment stations.

President Smith — We will now listen to Professor Armsby.

Prof. Armsby — This has been sprung on me somewhat unexpectedly. There is a very wide field in which science should come to the aid of horticulture as well as of agriculture. In both cases we may look for very helpful results from experimental work. The work of agricultural experiment stations may be divided into two classes, and the same division might be made with reference to horticultural work of the kind. A station may get, first, simply empirical results; may solve questions by some practical short cut method. I am not familiar with horticulture, but I can illustrate my point by an instance from agriculture. Professor Henry, for illustration, has been experimenting with reference to the corn crop, and such experiments give us some

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very valuable information, but give us no principle whatever. It is purely empirical work. The other line of work is in the way of ascertaining principles. We find out the principles upon which our knowledge is based. This work is slow and expensive. In the present state of agriculture and horticulture we ought to undertake both kinds of work. There are many questions that demand immediate solution. We want a working basis until we have time to find out the principles upon which the facts depend. The finding out of these principles is the higher class of work. In both cases there are many things to do in the way of investigation. Such subjects as the diseases of plants and the character and exhaustion of soils demand our attention. These questions may be investigated in either of the ways mentioned, and in all of them there is a great field of work presented.

But I should take issue with Mr. Hatch as to one point. I think the station should be under the charge of a scientific man. We have already a plenty of practical horticulturists scattered about the country in private nurseries, gardens and elsewhere, and we do not need them to take charge of a station of this kind. Of course we should want both practical and scientific work to be done at these stations, and the scientists in charge should be brought down to actual practice. On the other hand, these stations should be conducted on scientific methods, by a man trained in examining things carefully, weighing results, and finding out what they are teaching. I think perhaps such a station should have a practical horticulturist connected with it, who might have charge of the short-cut experiments. These stations should also be in intimate relation with the practical horticulturists, and should, investigate so far as possible, questions of interest to them. There is another reason why a scientist should be at the head of such a station, and that is in order that work may not be unnecessarily duplicated. Many practical horticulturists would not have the advantage of knowing that many difficult questions bearing on horticulture have already been settled. A station should not undertake work that has already been

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done. If there are any who have questions to ask me, I shall be pleased to answer.

Professor Seymour was called upon and responded as follows: I feel ill-prepared to talk on this subject, for I am scarcely a horticulturist, my work having led me in a scientific direction. I have had no opportunity to come in contact with the practical work of horticulture, but hope to profit by my opportunity now. You must take me as I am, and give me a chance to work in gradually, as I don't know much about the practical side of the subject. For instance, with reference to the scabbiness of apples on different soils. I may say that my work has been to study microscopically the apple scab; but I have had no opportunity to study it during its life at different times of the year. Such work as that belongs properly to an experiment station. All such work takes a great deal of patient work and time. At any rate for facts as to different soils, situations, and locations I should like to depend on you for observations. I should like to go with you through your orchards. That is the best way to get at these questions of horticulture. The physiology of plants is one of the most practical sides of horticulture or botany. For our knowledge upon that subject we should have to depend upon a chemist.

President Smith asked Professor Seymour if he could tell the convention what rust was.

Professor Seymour — It is a product of a fungus growth that penetrates the tissues of the leaves and produces blotches in the epidermis. Spores are produced at fruiting time. There is a question as to whether these spores live through the winter or not. Certainly many of them do not. It is believed that within little hard masses that are sometimes seen, there are spores that live through the winter. These have not yet been found in this country. Professor Trelease studied these arresting cases and found that they would germinate in the spring. It is almost certain that they do mature.

President Smith — Is it not a fact that as a general rule that a strong and healthy plant must be weakened in order to be attacked by rust?

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Professor Seymour — From a scientific point of view it is so that if a plant is weakened it will succumb more easily to the attack of disease. The same is true in all animal and vegetable life. It has been said that heavy fruiting exposes to rust. The fungus produces its injury by its physiological action on the plant.

Mr. Kellogg asked if any application could be made to avoid rust. Mr. Hatch said that he wished to lead the discussion in the right direction; that is to the question of experimental stations. We all want to know something about topics like the one just touched upon, but we should first do something about establishing these stations in order that we may get at the philosophy of these questions.

Mr. Tuttle — I think that we have been at fault in the state of Wisconsin. Other states have already been at work in this direction. I believe that it is important for the fruit interests of the state to have such stations. I think there should be one central station and others in different parts of the state. We cannot experiment in any one part of the state as to some questions, for instance as to hardiness. We must have experiments in different parts of the state. Minnesota and Iowa have some ten or twelve stations in all. That is what we want, together with a central station.

President Smith — I will occupy the time of the convention but for a very few minutes. I have noticed for twenty years that when I get a very large crop of strawberries, as large as I try to get each year, the plants are almost invariably attacked by rust and die. When I get a crop of Wilsons as large as I think I should get, I turn the bed right over and do not try to get another crop from it. Now, the question is, can some one tell me how to preserve that bed? I have tried cutting out the weak plants and yet the others are attacked. I had a bed of Manchester last summer which bore immensely. Next to them on one side was a bed of Sharpless which bore but a very little. On the other side was a bed of Wilson. In sixty days after picking the Manchester were nearly all dead, while the Sharpless were all right and the vines were standing ten or twelve inches high. Now can science tell us how to preserve these beds so as not to have to replant

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them so often? I presume the principle that underlies this question runs all through plant life. I have tried all that I can do.

Mr. Hatch — I should just like to tell you of one principle just to show the value of a single scientific idea. If we look at a young tree we will notice a little collar of bark where the top bark ends and the bottom bark begins. What is it that this little collar has to do with horticulture? It is the center of vitality in the sapling or plant. It will live the longest, and is the point that will live best in grafting or in transplanting. This is a principle which we can apply to anything we wish. Of how much more worth is it to us to know a principle than simply a rule. We want to get at these things with science and deep research.

Secretary Adams suggested that the convention take some decided action which should express its desire for the establishment of horticultural experiment stations.

Professor Armsby — There has been a bill introduced in congress during the present session, providing for an appropriation of $15,000 annually to agricultural colleges throughout the country, for experimental purposes. The bill provides that there must be a farm, and this money is to be used solely for experimental purposes. Bonds are required to be given for the true expenditure of the money and each institution gets only such a part of this money as is actually expended for these purposes. As I understand the bill this appropriation would apply to colleges now existing, or to those hereafter formed according to the land grant act of 1862.

Mr. Plumb — This is a question of very great interest and I think it too large to be covered simply by resolutions. I wish that this whole matter might be referred to a committee and let them bring it before us in a digested form. It is evident that all of us want something of this kind. I suggest the propriety of such a committee.

Professor Armsby — I simply want to say that this whole matter has come to be a most important one. I think that we ought to have the idea, that experimental work should be separate from educational work. It ought to be separate as to hands and as to management. The director of an ex-

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periment station ought to have very little else to do than to oversee affairs.

Mr. Hatch now offered a resolution providing for the appointment of a committee of three to take early action as to the establishment of experiment stations in Wisconsin, such committee to report at subsequent meetings during the year. It was thought best to have this arrangement so that the committee might be instructed when opportunity offers. The resolution was seconded and adopted.

The convention now returned to the hearing of observation reports. Mr. B. F. Adams read his

REPORT OF THIRD DISTRICT.

The year 1885 has made scars on our fruit trees that it did not kill, but many have survived in the Third district of Wisconsin that will do some service in fruit-bearing hereafter. More apples were grown in Dane county than the most sanguine expected, doubtless owing to the diversity of its soil and locations. I have been in all the counties of the district, except Iowa, and conversed with many as to the effects produced by the cold of last winter. Duchess, Tetofski, Golden Russet, Talmam Sweet, Walbridge, Willow Twig and Fameuse have fruited lightly in many places, and the latter a fair crop in a few favored locations. I have seen Plumb's Cider bearing some fruit also, but showing injury. Thousands of apple trees were killed and badly injured in the five counties of the district. I have seen only two varieties, Fameuse and Utter, loaded with fruit, and these on the same farm, where they were protected by belts of poplar, larch and evergreens intermingled. The solitary Utter tree is thirty years old, or nearly that, and stood near farm buildings, all of which were protected by timber belts as stated above. The fruit was perfect. The location is on high prairie land, black soil, 120 feet above Madison, the Utter tree on the crown of the elevation, but the orchard of iron-clads on a northern slope. Against this location I place in contrast another near this city; an orchard of 150 trees protected by a double row of soft maples on all sides except the

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street side running from northeast to southwest, which is protected by a single row. All were killed except a few Talman Sweet and Fameuse, which fruited lightly. The varieties were unknown to me; some were seedlings and many of them had been barren. Probably sold to the proprietor twenty-five years ago as iron-clads by a tin peddler.

Pear trees are not numerous enough in this district to determine what effect the climate has on them. The solitary Flemish Beauty on my own farm endured last winter well, but was injured by mice; the wound was patched and it made a fair growth last season. Crescent seedling among strawberries did best in this district; the Wilson still produces more than nine-tenths, of the strawberries in this district, but has suffered for two years past from rust. Gregg raspberry among Black Caps and Cuthburt (red) are considered our best for this region; Brandywine and Turner equally hardy and the first mentioned the best to handle. The Snyder is more planted than any other blackberry; Stone's Hardy and Ancient Briton to some extent. All are protected by some growers at an expense that varies as given to me, the lowest five dollars per acre and the highest forty. I have not protected any of this fruit. Our cherry trees were mostly killed. Miner plumbs were abundant last season. Grapes did not ripen well, but the Concord and Worden, Moores Early fruited. The newer varieties of apples, Pewaukee, Wealthy and a few Russian trees are to be found growing in this district, but not old enough to bear much fruit. They survived the winter and made a fair growth last season. Some of the new varieties of strawberries, Iron-clad, Piper's seedling and Bidwell fruited moderately compared with the Crescent and Wilson. Field mice have become a serious pest in several localities among blackberry and raspberry bushes, girdling the canes standing upright and even laid down. I had three-fourths of my canes killed by them; the solitary row of Stone's Hardy uninjured by them fruited well and I exhibited specimen branches of the fruit at the state fair. The Snyder canes, not girdled, also bore a little fruit, but evidently were greatly injured by the winter.

B. F. ADAMS.

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The report of Mr. Stickney was called for, but it was said that Mr. Stickney was at present in California. Mr. Floyd's report was next listened to. Mr. Floyd said that he had not had an opportunity to visit the different localities in his district, but had made inquiries and traveled somewhat and had made a short report and as good a one as he could from the material at his disposal.

REPORT OF FIFTH DISTRICT.

If I could draw a picture showing the condition of the orchards as they are in this district, in many respects it would be dark and gloomy for horticulture. Hundreds, yes thousands, have resolved to not plant more apple trees, since the almost total destruction of all the orchards, old and young, of the district, by the effect as they think of last winter's cold.

Apple trees seemed to go into winter quarters in a very low state in regard to vital forces from exhaustion, produced by, and from the effects of having produced a heavy crop of fruit and a previous hard winter, also from the effects of parasitic fungi on foliage. This pest has come upon us almost unawares, and I regard it as the most formidable foe to horticulture in general that we in the future shall have to contend with. I am quite sure that all of our sickly trees, those that did not quite give up their lives last winter, had a severe attack of this same foliage fungi last fall; I noticed it most on Wealthy, Fall Orange, Utter, Fameuse, and the crabs.

I have never known the Oldenberg to be affected with this parasite; I think it has the best leaf of any apple that I am acquainted with. I would want no better fortune than a dozen varieties of apple that would give a year's succession of fruit equal to it in all respects.

I have strong hopes in the Northwestern Greening, I have positive proof of its hardiness up to seven or eight years old, how it may prove after it comes into bearing I cannot say, but it seems to me that a variety of apple standing on low, strong soil, exposed to a temperature forty-eight degrees be-

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low zero, and produce fruit fine and fair, of good size, during the off year, must be entitled to the right of being called *hardy*. I am aware of the opposition to the general introduction of this variety, but feel confident that it will work out its own salvation on its own merits. I have no fears of its failing except its leaf that may not stand the attack of the fungi.

I am not able to give percentage of losses of the varieties we were in the habit of calling iron-clads, or nearly so, Golden Russet, Talman Sweet, Westfield, Seek-no-farther, Plumb's Cider, Pewaukee Grimes' Golden and Baltimore are all gone. The injured list embraces every variety we had grown. Duchess of Oldenburg, least of all, Wealthy, Northwestern Greening, Tetofski, Yellow, Transparent, are next in the down grade. McMahn's White Fameuse, Perry Russet, Blue Pearmain, Fall Harvey, Red Astrachan, St. Lawrence, Fall Orange, Utter, Shaker Pippin, and Walbridge run down to the dead line, but how large a per cent. we may be able to save above the dead line is not safe for me to predict.

Small fruits are receiving more attention than ever, this is especially true of blackberries. Ancient Briton is the variety cultivated most extensively, yielding from three thousand to five thousand quarts per acre, in field culture, protected by laying down and covering with earth. Strawberries gave us nearly a full crop last season; the district is quite well supplied with this fruit. Increased attention is also given the raspberry. Turner is the most hardy and productive of all the reds that I am acquainted with, buds of this variety stood 48° below zero without protection last winter. Cuthbert is good with protection, comes in season of early blackberries.

Tonhegan and Ohio are regarded as the two best varieties of blackcaps.

Grape culture is not receiving the attention it did a few years ago, except in favored locations.

H. FLOYD.

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REPORT OF SIXTH DISTRICT.

The winter of 1884–5 will long be remembered by all fruit growers of Wisconsin and especially by those of this locality as the winter that killed our fruit trees, including those called iron-clads except Duchess and Tetofski. Many have given up the idea of ever setting another orchard, but some are ordering trees for next spring planting, and giving as the reason that those that were killed lived to bear fruit a number of years, and that we may not have another such a winter for years to come. More are waiting for the Russians; will plant Duchess, Tetofski, a few Wealthy and Utters—the last named proving much more hardy than many of us thought; and will set more crabs, Lake Winter, Transcendent, Whitney's No. 20 and others known to be good. All are planting much more small fruits, especially grapes, mostly of Concord, Worden and Janesville for black; Delaware and Rogers, 15, 9, and 4, with a few of the new kinds, viz.: Niagara, Brighton, Moore's Early, Empire State, Amber Queen, etc.; Mostly Wilson and Crescent for main crop of strawberries; Philadelphia and Cuthbert for red raspberries; Mammoth Cluster and Gregg for black caps; also a few blackberries of Ancient Briton and Stone's Hardy.

D. HUNTLEY.

APPLETON, WIS.

The reports of Mr. Toole, of North Freedom, and of Mr. Partridge were called for but neither of the gentlemen was present.

The report of William Springer, of Fremont was next read by Secretary Adams.

REPORT OF NINTH DISTRICT.

This middle district is not much of an apple district, so I will only speak of Waupaca county, which I think is the best adapted to fruit growing of any of the districts, the win-

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ers of '84 and '85 were the hardest on apple trees of any year since it has been settled, seventy-five per cent. of the Russetts, Willow Twig, Snow and that class of trees are dead, and the rest are badly injured. The Haas, Walbridge, Plumb's Cider, Pewaukee, Utter Red and a few others that we considered quite hardy are all injured. At least half of all these are dead; of the seedlings that have stood and bore heavy crops of apples, many are dead and others injured. Of the Wolf River trees a few are injured. Of over fifty of my bearing trees of this variety two are dead, many showing no signs of injury. Mr. Balch had thirty-two varieties on exhibition at one county fair; Mr. Wrightman ten varieties; Mr. Al. Smith, seven, and a few others; but few of their trees show any injury more than the Duchess. I have visited most of their trees this fall. In another report we have spoken of many of these trees separately, as they appeared last June. I feel confident that among these we have something to build upon; size, beauty, quality and keeping qualities that are not excelled in our old sorts.

But few grapes were raised in this county, they set quite well but rotted on the vine. Of more than one hundred varieties I could get but forty-three varieties fit to show of all the grapes I had. None in leaf and fruit were more perfect than the Martha and Parklington and North Star. The latter, a seedling of this county, a black grape of not best quality, but the longest clusters of any I have, said to be excellent for red wine.

Blackberries and raspberries that we protected, were a good crop; strawberries were a very good crop. The Wilson's and Crescent have given best crops.

Very few currants were raised on account of the currant worm.

Of crab apples, Whitney is the best in quality, but is not quite hardy enough; Briar Sweet should be in every yard, for canning. Anything of a winter's crab of good quality is also in place while we are waiting for something better. I am satisfied we can raise varieties top worked on crab that we cannot root grafted. I visited the orchard and nursery of E. W. Daniel this fall and found his bearing trees of North-

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western Greenings were grafted high on crab trees and were fruited well. Wolf River worked the same way were also bearing well. Mr. Daniel's trees were in sod, the most of them trees worked well on the crab, growing as fast as the scion.

WM. A. SPRINGER.

OBSERVATION REPORT OF SECOND DISTRICT.

From the limited observation and from inquiries of fruit growers in this region, I judge there is not much left of the older orchards. The frequent severe winters previous to the summer of 1884 had done their work of destruction. The fall of that year found every remaining tree laden with an abundant supply of the finest apples. Of course the trees were illy prepared for the long, hard winter following.

Many of the older orchards in this section were planted about thirty years ago. At that time little attention was paid to the adoption of varieties, more having in mind the luscious fruit of other days in an eastern home. Accordingly, many of these orchards contained twenty or more varieties, reaching from those which have proved so nearly hardy to those which gave up the ghost at the first appearance of a white frost. Of those that remained to bear fruit were Fameuse, Golden Russet. Seek-no-farther, Talman Sweet, Northern Spy, Lowell, Fall Orange, Sourbough, Early Harvest, Baily Sweet, and many other choice but tender varieties.

With a comparatively new soil and considerable natural protection, the young orchard flourished and came to fruit bearing. Then came the time of trial. One variety after another was swept away, until now hardly a sound tree remains in the orchards.

About ten years after the first trees were planted, the question of hardiness had become an important one. Then the Duchess, Red Astrachan and Alexander were planted. Still later the Tetofski, and Wealthy, McMahon and the

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Russians. Now what would we learn from these thirty years' experience?

1. Under our present circumstances more care is necessary to raise an orchard than when the country was new.

2. Four-fifths of the varieties formerly planted should be discarded.

3. Many of the varieties now dead and gone, have paid for themselves many times over by the abundant crops of fruit. Of these may be mentioned Fall Orange, Lowell, Baily Sweet, Wine Sap, Red Astrachan, Sourbough.

4. A few of the varieties are good for a quarter of a century, and will pay to replant. Of these are Golden Russet, Fameuse, Alexander and Talman Sweet.

5. So far only Duchess and Tetofski are iron-clad (Walbridge might be classed here but for its worthlessness).

The young orchards that promises well contain Fameuse, Wealthy, Plumb's Cider, Duchess, Tetofski and Talman Sweet.

GEORGE C. HILL.

Rosendale, Wisconsin.

Professor Seymour stated that he had in his possession some reports sent to Prof. Trelease, which might be read at this point. These reports were now read.

WAUPACA COUNTY HORTICULTURAL SOCIETY.

Our Society has about fifty members. Much interest is taken in our discussions. We have from two to three meetings in a year — one in January, when our officers are chosen, one in June, during the strawberry season, and one in September.

Our meeting last June was held at Weyauwega, in connection with the state society. As the proceedings of that meeting will be published in the society's reports, it does not seem necessary to further notice them here. It may not prove tiresome, however, to simply allude to the fact that our society was greatly benefited by the visit of the state society.

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At our January meeting the following officers were elected:

President — C. M. Fenelon, Weyauwega.

Vice President — W. W. Crane, Weyauwega.

Secretary — J. Wakefield, Fremont.

Treasurer — J. A. Mathews, Weyauwega.

Executive Committee — W. A. Springer, chairman; A. V. Balch, W. Wilson.

Delegate to State Society — J. Wakefield.

Fifty dollars were raised for premiums at our June meeting, provided the state society could be induced to meet with us, to whom an invitation was extended.

J. WAKEFIELD,
Secretary.

REPORT OF GRAND CHUTE HORTICULTURAL SOCIETY.

When this society was re-organized in 1879, the members were fully confident that in less than five years their orchards would be full of fruitful trees, their gardens well supplied with small fruits and their homes inwardly and outwardly adorned with plants and flowers. But, alas! how fleeting were these hopes, after years of careful culture, with great care as to hardy varieties, we now find ourselves with no reliable apples, except the Russian varieties; our orchards are almost tree-less, and we are now replenishing our winter fires with the wood of our choicest trees. The past season we have had fewer apples than ever since our trees came into bearing. Those varieties that have been called the "test hardy" have succumbed with more tender kinds, and at present we have little confidence in any varieties except the Russian. But we are not wholly discouraged, many will set a few of the old kinds, such as Fameuse and Talman, although many who grew these kinds have not a tree of these varieties left; others will try the new Russing apple propagated by Mr. Tuttle, and also hold fast to the Duchess and Tetofski.

With small fruits we have been more successful, but with these there must be a continual warfare against insects, mildew and rust.

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Many are growing berries for market, while others supply only their own tables.

Grapes were an excellent crop and gave to their growers great satisfaction. The mildew did not appear to any extent in this locality.

With plants and flowers we have fewer discouragements, all that are desirable for our homes can be grown indoors and out, if the time can be taken for their culture.

Our meetings have been held quarterly as in former years, are well attended and have been very pleasant and beneficial. We usually have an exhibition of flowers and fruit, have sometimes several papers, but usually conduct our meetings by discussion and conversation on horticultural subjects.

The annual meeting was held January 7th, the former officers were elected, viz.: L. L. Randall, president, A. H. Buech, treasurer, Mrs. D. Huntley, secretary. Our meetings for the balance of the year will be held in April, July and October.

MRS. D. HUNTLEY,
Secretary.

FREMONT HORTICULTURAL SOCIETY.

Our society was organized in 1880. Residents of our town may become members by paying twenty-five cents. We hold two regular meetings; one the second Thursday in January, when our officers are chosen, and one in September. We sometimes have a strawberry festival in June.

At our last meeting, held in January, at the house of Mr. Paul Scheiser, we had an entertaining time. Several members spoke of the effects of the past winter upon our fruit trees. All admitted that they were generally injured, some, past hope. Mr. Springer claimed that some of our seedlings had proved as hardy as the Duchess.

The secretary stated that his Wolf River trees had made no growth the past season, although still alive. Mr. Springer said, that except on those that bore fruit the previous season, his had made good growth.

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The Wolf River originated in this town. The parent tree stands on the farm of Jacob Steiger, and is over thirty years old. It came near dying the past season, but Mr. Steiger says it shows signs of rallying, and may live for years.

Mr. Robert Callander, of our town, has a seedling crab, called the "Callander crab" that promises much. It is large, one specimen being eight and a half inches in circumference, excellent flavor, a very long keeper, and about as hardy as a crab ever gets to be. We think that Mr. Callander has a good thing there, if he only works it right, as we would rather have it than any crab we know of.

We have about twenty members. Our present officers are—

President, C. F. Eaton; Vice-president, Paul Scheisser; Secretary, J. Wakefield; Treasurer, Jacob Steiger; Executive Committee, W. A. Springer, Henry Spindler, R. M. Hubbard; Committee of Observation, J. Wakefield, Dr. C. D. Eddy, W. A. Springer.

J. WAKEFIELD,
Secretary.

FREEDOM HORTICULTURAL SOCIETY.

BARABOO, Wisconsin, February 27, 1886.

MR. H. C. ADAMS, Madison, Wisconsin.

Dear Sir — The following is the report of the Freedom Horticultural Society, held February 17, 1886:

The following officers were elected:

President — Leonard Roser, Baraboo.

Vice-President — Chas. Hirschinger, Baraboo.

Secretary — George Faller, Baraboo.

Executive Committee — Leonard Roser, Baraboo; Herman Voll, North Freedom; Geo. Armbruster, Sr., Baraboo.

Treasurer — Geo. Armbruster, Jr., Baraboo.

Very Respectfully,
GEORGE FULLER,
Secretary.

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ANNUAL REPORT OF THE JANESVILLE HORTICULTURAL SOCIETY.

Annual meeting held October 24, 1885, at which time the following officers were elected for the ensuing year:

President — Geo. J. Kellogg.

Vice-President — D. E. Fifield.

Secretary — E. B. Heimstreet.

Treasurer — Dr. J. B. Whiting.

Board of Trustees — Jas. Helms, O. P. Robinson, A. D. Wickham and F. S. Lawrence.

Messrs. Geo. J. Kellogg and F. S. Lawrence were elected delegates to the State Horticultural Society at its meeting in 1886.

The secretary reported expenses last year $2.70. Cash on hand, $100.

Following is a list of life members:

F. S. Lawrence.	J. D. Rexford.	A. Hoskins.
E. L. Dimock.	J. B. Whiting.	I. C. Sloan.
Levi Allen.	S. A. Hudson.	J. W. Allen.
O. P. Robinson.	A. D. Wickham.	Wm. Payne.
Geo. J. Kellogg.	J. J. R. Pease.	Anson Rogers.
S. U. M. Putnam.	H. Richardson.	B. Spence.
D. E. Fifield.	R. J. Richardson.	Jas. Helms.
E. G. Fifield.	A. Graham.	A. Palmer.
E. B. Heimstreet.	John R. Bennett.	B. Wheeler.
J. F. Morse.		

HONORARY MEMBERS.

Mrs. F. S. Lawrence.	Mrs. F. F. Stevens.	Mrs. H. Bump.
Mrs. Chas. Hodson.	Mrs. H. D. McKinney.	Mrs. G. J. Kellogg.
Mrs. E. B. Heimstreet.	Mrs. W. A. Lawrence.	Mrs. C. A. Levitt.
Mrs. Pliny Norcross.	Mr. A. O. Wilson.	Mrs. D. E. Fifield.
Mr. G. Veeder.		

Life members, 28; honorary members, 13; total membership, 41.

E. B. HEIMSTREET,
Secretary.

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GREEN LAKE COUNTY HORTICULTURAL SOCIETY.

MARKESAN, WIS., March 8, 1886.

MR. WM. TRELEASE:

Dear Sir: — The Green Lake County Horticultural Society has been kept alive during the drawbacks of the past year by the only safe method, the union of its members. Our meetings are profitable as well as entertaining. People, hearing of our meetings, and not knowing the nature of the society, step into to see what they are doing.

Our business meetings being held in the winter, are not the place for a great display of fruits and flowers, but are confined mostly to the subject of the meetings. At our last meeting, some of our officers having taken up work in other parts of the country, new ones were chosen in their places.

The following officers were chosen:

President — Mr. Chas. Lambert, Sr.

Vice-President — Mrs. Seymour.

Treasurer — Mrs. M. J. Whittier.

Secretary — Miss E. J. Whittier.

The enthusiasm manifested at our winter meeting we hope and trust may continue and aid us in the summer meeting in June.

ENID J. WHITTIER,
Secretary.

President Smith reported from his district that a smaller proportion of trees had been damaged in his county than in Outagamie or Manitowoc counties. The Duchess bore very finely last year. The Golden Russet bore reasonably well also. Crabs were a perfect drug in the market, and could neither be sold or given away.

Mr. Plumb's paper on the subject of re-districting the state was called for. He said: "This question is so large and of such vital interest to the horticulturists of Wisconsin that I have ventured to write a little paper on the subject. I can read the paper in five minutes, but I should like thirty min-

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utes for discussion." Mr. Plumb now read his paper, explaining it by means of a large map, on which were indicated the divisions of the state as he would re-district it.

DISCUSSION.

Mr. Plumb said that there was much more which he would like to have said on the subject, but thought he had given enough to introduce it. He said he wanted the best plan that could be devised for the re-districting and did not mean to urge his if there was a better one. He hoped that the gentlemen of the convention would freely express their views on the subject, for, in his opinion, this matter presented in his paper lies at the very bottom of success in horticulture. "In pursuit of my business," he said, "I am constantly receiving letters from persons as to the trees recommended by our state society. These letters I have to answer personally. Every nurseryman is receiving such letters, and would like to have these districts made. The society knows but very little as to the range of horticultural adaptations of this state. I present these views for consideration."

Mr. Plumb's plan was attacked by Mr. Kellogg and Mr. Hatch. Mr. Hatch thought the variations of geological formation, etc., in any one of Mr. Plumb's proposed districts were too great to admit of any single list of trees being recommended for general cultivation within the district. As an example he spoke of Richland county in particular. With regard to recommending trees, he said: "We have had to go back on list right along, unless in the case of the Duchess. Don't fool the people in this manner."

Mr. Plumb — The trouble is that so far as raising varieties is concerned, Mr. Hatch is worse off than even Mr. Smith. In my opinion some general list would run over each of these districts as I have shown. My purpose has been to give an outline of districts to take the place of the political divisions that we now have. It will be necessary that the state be sub-divided according to characteristics of certain portions of the country. When we come to the application of growing fruit the question that concerns us is what we

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have got on top of a mountain rather than whether the mountain is a driftless or igneous one. Of course there must be committees to report as to exceptions in the application of general lists.

Mr. Phœnix — I don't see why we shouldn't have a committee to settle this question. I move that a committee of three, Messrs. Hatch and Plumb to be two members of the same, be appointed to consider this question. The motion was carried, and George J. Kellogg added to the committee.

Mr. Plumb — This is a matter of vital interest. This committee ought to have time to consider the thing carefully and I think we ought to have an expression of the opinions of the convention for we have gentlemen from all over the state who have views on the subject.

Mr. Plumb moved that Messrs. Patten and Watrous, delegates from the Iowa Horticultural Society, be made honorary members. The motion was unanimously carried.

The committee on finance reported that they had examined the report of Treasurer Anderson and found it correct. The report was adopted.

Captain Watrous was called upon for a few remarks. He said: I have been more interested this morning in the discussion of experiment stations than anything else. We have been working in the direction of these stations in Iowa. Two years ago our appropriation was increased by the legislature from one thousand dollars to two thousand five hundred dollars per year, the additional amount to be devoted to the experimental work under the direction of the State Horticultural Society in any direction that we may desire. We have got to come at a hardier race of fruits both great and small, and we propose to import from any foreign country. We hope to get a race of seedlings adapted to our country by crossing. We have established twenty experiment stations. Our plan is to have a committee which selects certain farms about the state as stations, and furnishes these stations with cuttings, scions, roots, etc., on condition that the persons managing these stations shall keep an account of the growing of them and report annually to our state society. The work is all new yet, but we feel very hopeful

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about it. We began sending out material last year under this rule and next year we shall have our first reports. We shall send out again this year. All this work is of course purely empirical, no one being expected to conduct scientific work. These reports are to contain all necessary information as to soil, exposure, protection by trees, etc. They will be collated and then the cream of them will be published. I am very glad to see that your society is doing something in the same way, and I shall be pleased to join in the discussions from time to time.

Mr. Watrous was asked if he had had any experience as to Russian varieties of apple trees and their bearing qualities. Mr. Watrous suggested that Mr. Patten could give more information on that subject than he could. Mr. Patten said: It gives me particular pleasure to meet with Wisconsin horticulturists. My father settled in Wisconsin in 1848, and I early began to take an interest in horticulture, and became acquainted with some of the early fruit-growers of Wisconsin, among them Messrs. Plumb, Peffer, Tuttle and several others. I resided in Walworth, Sauk and Dane counties about fourteen years in my early life, when remembrances become very lasting with us. I have ever since always had a peculiar interest in Wisconsin horticultural people. I do not think that the present is perhaps a proper time to enter into a statement as to Russians, but at a later time I shall be glad to give the observations that I have made on that subject, and shall take pleasure in entering into your discussions.

Mr. Cotta, of Illinois, was now called on. He stated that at a very late date he had received a letter requesting him to come up to this convention as a delegate, and had taken the first train for Madison and was here to report. He said: I live in Cairo county, Ill., and although I am not an Egyptian, I have been sent to spy out the land. There is something wrong down there where I come from. I have but little information to give the convention, except that I have been engaged in top grafting hardy varieties upon iron-clads, I do not like to speak of one thing about this before nurserymen. That is that this form of grafting calls for a great

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increase in labor and expense of growing trees. For this reason trees grown in this way would not be able to compete with the cheaper trees thrown on the market, unless we can get enough of the people in some way to warrant us in doing so. I consider my best trees to be the Duchess and Whitney's No. 20. I am not completely satisfied with the latter however. I have lost all my trees except my top grafts, and I am getting very sick of working at this poor dying rate. We have a prairie soil which is somewhat more dangerous to fruit-growing than others. Our location is gently rolling. In wet seasons the sub-soil is too tenacious and we have too much moisture near the surface. Wisconsin land is generally better than ours. Every few years when a test winter comes along our trees have been damaged. The two kinds of trees I before spoke of were set in the same kind of soil and were worked in the same manner. I have found that I made a mistake in grafting in using stems that were a little too thick, for it takes them too long to heal over. I have decided to keep on as I have done in a small way, using trees two or three years old and under, the latter being about the right size for grafting. I prefer the splice graft myself, although any other form may be as good.

Mr. Hatch moved that Mr. J. V. Cotta be made an honorary member. The motion was unanimously carried, after which the convention adjourned until 1:30 P. M.

AFTERNOON SESSION, February 2, 1886.

The meeting was called to order at two o'clock. The first business taken up was the election of officers. Messrs. Hoxie and Phillips were appointed tellers.

Mr. Harris, delegate from the Minnesota State Horticultural Society, was elected an honorary member.

An informal ballot for president was taken. Whole number of votes cast, 27. J. M. Smith received 17; B. F. Adams, 6; scattering, 4. By motion, the vote was made formal and unanimous for Mr. Smith as president for the ensuing year. President Smith signified his pleasure at knowing that a

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large majority of the members endorsed his work and were apparently satisfied with it.

On motion of Mr. Phillips, the secretary was instructed to cast a ballot for B. F. Adams as vice-president of the society.

An informal ballot was taken for secretary. Whole number of votes cast, 24; of which H. C. Adams received 14 and Miss Kate Peffer 10. On the formal ballot 27 votes were cast, of which H. C. Adams received 18 and Miss Kate Peffer 9. H. C. Adams was declared secretary for the ensuing year.

The secretary was instructed by the convention to cast a ballot for B. S. Hoxie for corresponding secretary for the ensuing year. In the same manner M. Anderson was re-elected to the office of treasurer and B. F. Adams to the office of superintendent.

The convention next proceeded to the election of the Executive Committee, one from each congressional district. S. Hunt, of Evansville, was retained in the first district; G. C. Hill, of Rosendale, in the second district; B. F. Adams, of Madison, in the third district; J. S. Stickney, in the fourth district; Henry Floyd, in the fifth district; Daniel Huntley, of Appleton, in the sixth district; A. G. Tuttle, of Baraboo, in the seventh district; E. G. Patridge in the eighth district, and William Springer, of Fremont, in the ninth district.

By motion the election of the committee on Observation was deferred until to-morrow afternoon.

Mr. Roe introduced the following resolution:

Resolved, That this society most heartily appreciate the unassuming, yet intelligent and effective work done for Wisconsin horticultural exhibitors at the New Orleans Exposition by Mrs. J. M. Smith of Green Bay and hereby tender her our heartfelt thanks for her generous and valuable assistance.

The resolution was unanimously carried by a rising vote.

Mr. Anderson offered a resolution which was read by the secretary, expressing the Society's appreciation of the work being done by Farmer's Institutes as conducted by Mr. Morrison. This resolution was also adopted.

Mr. Hoxie read a short memorial address on the life of the late Franklin B. Hough, of New York.

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A MEMORIAL ADDRESS ON THE LIFE AND CHARACTER OF FRANKLIN B. HOUGH.

By B. S. HOXIE, Evansville, Wis.

Mr. President and Members of the Wisconsin State Horticultural Society — Shortly after our summer meeting last June, I received the news of the death of that faithful worker and ardent lover of nature, Dr. Franklin B. Hough, who died at his home in Lowville, New York, June 11, 1885, in the 63d year of his earthly life.

Politicians, statesmen, and famous warriors have many to speak their praise and write the record of the lives and deeds; but as a private citizen in his own native state, devoting his life and energies for the benefit of mankind; of him and such a life I wish to speak.

Dr. Hough was born in Martinsburg, Lewis County, New York, July 20, 1822. In 1843 he was graduated from Union College, and in 1849, from the Cleveland Medical College, where he received his diploma as a practicing physician; but his love of nature led him into scientific study for practical results, and at his death his name appeared on the title page of over seventy volumes either historical, scientific or miscellaneous, and all of this time keeping abreast in his profession. In this brief address it is not my purpose to mention all of these, but only such as are more nearly connected or related to the interests of our society.

The first of these, so far as we know, was a catalogue of the plants of Lewis county, in 1847, while he was yet a student.

This was followed by a history of St. Lawrence and Franklin counties. In this same line of research we find "Essays on the Climate of New York," under the auspices of the State Agricultural Society. Again, we have a work of great value to the student of nature, titled, "Observations

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upon Periodical Phenomena of Animal and Vegetable Life." This work was prepared from original returns and investigations throughout North America under direction of the Smithsonian Institute, and was published in 1862, being one of the most valuable on that subject in all that vast library.

In 1874 he published his first "Report on Forestry," under commission from congress, which was followed by a second and third report in 1878, 1879, and a fourth report in the year 1881 and up to 1883. During this time he was Special Commissioner to Germany, and his practical researches as Commissioner on Forestry in that country, published by congress, were and are of immense value to the United States.

In all of these years his active mind was employed with various other subjects as his published volumes show, and at no time in his life was his pen idle, and quite frequently he was engaged in writing and preparing for the press works unlike in character and research. This to him was *rest*, and in different rooms with different surroundings he took up the new labor and by this method escaped the mental pressure sure to follow.

Whatever subject came under his pen he handled it with the clear understanding of a vigorous mind, and often to complete some unfinished pages would he rise in the night so that he could take a new task in the morning. With all of this labor in writing and publishing, he not only found time for his practice, but wrote over one thousand newspaper articles besides many addresses in pamphlet upon historical and scientific subjects. He was a member of many literary and scientific societies, besides being an honorary member of others which were favored with his correspondence. And almost up to the hour of his death was his mind and pen employed for the benefit of mankind; leaving several works in manuscript and one or two of which are being prepared for the press by his sons.* Always too busy to write

* Historical and Statistical Record of the University of the State of New York during the century from 1784 to 1884. By Franklin B. Hough, M. D. Ph. D., 1885.

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of himself or his own labors; but when stricken with a fatal disease which so soon ended his labor, did he make the attempt to put in form something of his life-work or his autobiography, and in a few hours' time had completed forty pages of manuscript. In one chapter, referring to his marriage, he says: "I have ever since regarded this as the most fortunate event of my life. I have now a *home* as well as a house." This word may convey it all, for his indeed was a home of happy contentment. If not stored with boundless wealth it was filled with ease and comfort.

It will thus be seen that in the death of Dr. Hough not only his immediate friends are bereaved, but the whole nation suffers the loss of a noble worker; for in the zenith of his usefulness the conqueror of all earthly ambitions claims his victim and with that unerring certainty which spares none, Dr. Hough has passed from his earthly labors to the reward of a perfect manhood.

Dr. Hough's public life and the record of his labors are before us; they are ours, and in the record of that life we trace a determined purpose, a wonderful memory, an indomitable will, and a perseverance which removed all obstacles in the way of his work and duty.

Perhaps I should close my sketch here and say rest noble worker, but my task would be only half done, my record incomplete; the main spring of life, duty, and action would not be revealed, and it is to this in living memory we wish to turn. Inheriting a love for the beautiful, his home was just out of the village of Lowville, overlooking a part of the Adirondac forest, and in that home the wife and mother was queen and counsellor, and in vacation days when the sons were home from college and the father from his wanderings in the interest of science, they were all boys together and all eager to listen to the recital of some adventure of the last journeyings; and none was more charmed than *mother* and in her care and trust is all the property confided to the use of grown up sons and daughters.

Dr. Hough left four sons and three daughters; one a widow who died only a few weeks after the father, whose pure and noble life endeared her to the whole community. Of the

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sons, the oldest Franklin H., is a prominent lawyer in Washington and a graduate of Union College. Romazn B., is the second son, and a graduate of Cornell, is a Botanist and Naturalist, though choosing the practice of medicine for a profession. Elida the third son, is also a graduate of Cornell, and on him perhaps the mantle of his father has fallen, for he has taken up his chosen pursuits, and with the aid of the other brothers is completing the unfinished works commenced shortly before his death, as well as the autobiography of his life. The youngest, Lincoln, as well as the younger daughter, are yet to complete their education.

Dr. Hough was a true American citizen, but in no sense a politician. Love of country, love of home, and a desire to be right and do right were his predominating traits of character. His library embracing historical and scientific works with a large and varied collection of miscellaneous matter in books and manuscript with specimens rare and curious in art or science, occupied a separate building, and it was here that friends and neighbors found him when not engaged in out door pursuits, or absence from home demanded his attention; for labor was his repose and a change of subjects his rest.

His was eminently a religious life, and that religion was so pure and broad in its character that it reached out and embraced all humanity, and where truth and goodness established a shrine, there he was a willing worshiper.

He did not believe this earth to be man's only abiding place, or "that life was a bubble cast up by the ocean of eternity to float a moment on its waves and sink again into nothingness." Briefly, ladies and gentlemen, I have endeavored to place before you and upon record, my appreciation of a faithful and true worker; though not a member of our society, or making this branch a particular study, yet every horticulturist is benefited by his labors. If this obligation to the departed, and a duty to his family had fallen to worthier hands to perform, I should have been pleased more, but to me it has been only a just tribute to a useful life and as such I hope it will be received, finding an appropriate

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place in the volume of our transactions, and in the home of the bereaved family.

The language of one of the poets is so appropiate to the subject of this sketch that I, in closing, will take his words as my thought.

"Shall I be left forgotten in the dust
When fate relenting, lets the flower revive;
Shall nature's voice to man alone unjust,
Bid him though doomed to perish, hope to live.
Is it for this fair virtue oft must strive,
With disappointment, penury and pain?
No! Heaven's immortal spring shall yet arrive,
And man's majestic beauty bloom again,
Bright through th' eternal year of triumphant reign.

I will add that Dr. David Murry, of Albany, New York, is preparing a memorial relating to the subject of this sketch, which is to appear in the publication of the board of regents of that state. Since his death the family have received memorial notices published in India, Spanish, Flemish, French and German languages as testimonials of his life and work.

On motion, the secretary was instructed to cause one of the volumes containing this memorial to be bound in special binding, such as is used in such cases, and presented to the family of Dr. Hough.

The convention now turned to the order of business, reports of committee on Observation.

Mr. Peffer then followed with a

REPORT ON WAUPACA SEEDLINGS.

G. P. PEFFER, Pewaukee.

1ST. WOLF RIVER.

The original tree stands near the bank of the Wolf river, on the east side, and about eighteen feet above low water mark. In high water part of the roots on one side of the tree are under water. The soil appears to be about twelve inches in depth, and is a clay loam, that seems to be firm

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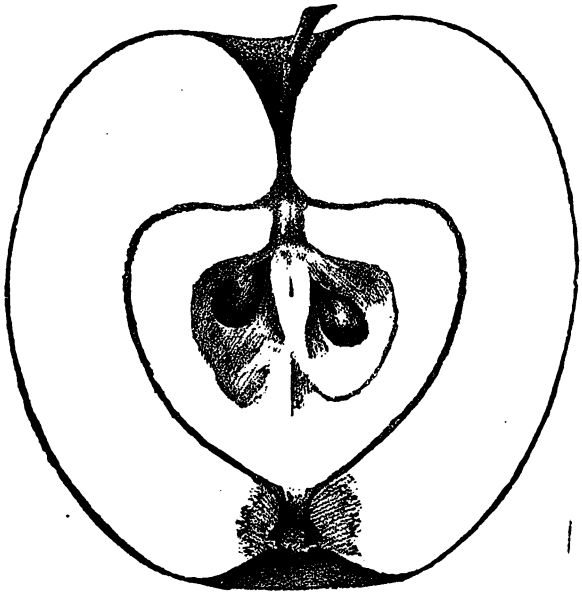

Northwestern Greening.

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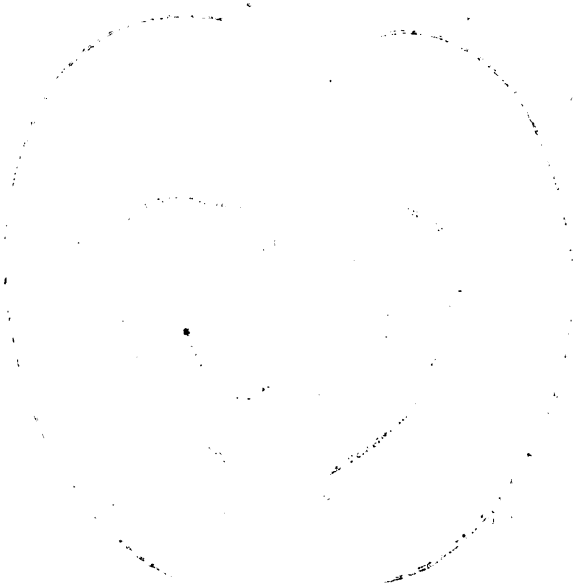

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and well packed, but is underlaid with a fine quicksand. The main top limbs are all right, and have some fruit. It is rather a hard spot for a tree to live.

In orchards that were in good shape last year we found nearly all the trees injured. But the Tetofski, Duchess, Wolf River and Alexander with fruit. St. Lawrence, Wealthy, Red Astrachan, Pewaukee, Plumb's Cider, Fameuse and Golden Russett more or less injured. Crab-apples we found to be all right. But all other varieties than crabs — Duchess and Tetofsky — which were not injured, were on slopes descending to the north, northeast or east, or were on top of a ridge. Nearly all the seedlings we found had such locations.

NORTHWESTERN GREENING.

Originated by Jasen Hatch, town of Iola, Waupaca county. Original tree died in 1875. No evidence of special hardiness.

MATTHEW RUSSETT.

This variety held out to the last at the New Orleans Exposition and was in perfect condition at the summer meeting held at Weyauwega, in June, 1885. The original tree is vigorous and healthy. It stands on a village lot, in Weyauwega, and grew from seed planted by Mr. Matthews, from whom the variety receives its name. The fruit in color and shape resembles the Golden Russett, has a larger eye, is somewhat flat at the ends, flesh yellowish white, fine-grained, sub-acid, of fine flavor, and one of the best keepers. If this variety proves hardy, it will be the greatest acquisition for the northwest yet introduced. It has not yet been tried away from its native home.

By motion of Mr. Hatch the convention authorized an order of twenty-five dollars on the treasurer to cover the incidental expenses of the president. Another motion providing that the matter of a summer convention should be left for discussion to the executive board consisting of the president, secretary and treasurer, was now carried.

This paper was followed by one on the same subject by Mr. Howlett, which was read by the secretary, Mr. Howlett not being present.

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OUR RUSSIAN FRUITS.

By H. H. HOWLETT, Baraboo.

When I saw my name on programme for a paper on "Our Russian Fruits," with two of the oldest practical nurserymen in the northwest, I came to the conclusion that after friend Tuttle had extracted all the cider and then passed the cheese over to our venerable Peffer to obtain all the seeds, but little would be left for me to say about the pumice, even if from Russian fruit.

My experience in fruit growing in Wisconsin commenced in 1857. In a small way I propagated the apple, cherry and plum. After years of bitter disappointment with nearly the whole list of so called "iron-clads," became disgusted with the effort I and all others had made who had as poor a location for fruit growing. Hearing that the agricultural department at Washington had imported a large collection of Russian apple trees, I applied for some scions, and received in February, 1872, a few scions of twenty-four varieties, which I grafted upon pieces of apple roots and planted in nursery.

Nearly all grafts made trees, and when three years old were planted in orchard 20x20 feet, about one hundred trees in all. They grew well, none have winter killed, a few bark burst near the ground, some the mice destroyed, others were galled by careless plowmen, and all have been neglected by not pruning, or removing sprouts about the roots, and allowing a sod to form over their roots. With all this neglect they have borne fruit from one to six years, and have proved to me that we have found a class of trees that will live and give fruit in great abundance, of fine quality, and for the whole year.

The fact that some of the Russian apples will not stand our winters, does not prove that *others will not.*

When Dr. Regel, director of the imperial botanic gardens at St. Petersburg (and from him our department received its collection in 1870), made his great collection he obtained

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them *from all parts* of Russia, and gives a short description of each, its habits, from what locality he obtained it, and if hardy, half hardy or tender at St. Petersburgh. The half hardy and tender varieties we should let *severely* alone and plant only those that have proved hardy at St. Petersburg or further north, and we can safely expect to have fruit for ourselves, our children and grand children, for the poor, and for those who are too shiftless to plant trees, too *honorable* to steal, but employ others to do it for them.

My orchard is located upon what is known as heavy timber land, a rich, black loam with clay sub-soil, nearly level, slight slant to the south and west, has no protection of any kind; in fact, the most exposed location that could well be found within a number of miles.

One great fault with the deparment list is, it contains too many early or fall varieties, but few are winter and still fewer are long keepers.

Yet we have them in the collection that will keep until the early varieties are ripe, about the last of June or first of July. In Russia this same collection are nearly all kept until winter, and many until June, July, and some still longer.

I do not wish to be understood that all the Russian apples are first-class as to quality or productiveness, but many are as good as our best, as productive as is profitable, and some as long-keepers as any known. When we have fully tested all varieties of even the department list, we will find without doubt a list of apples adapted to each of the varied soils and locations of the whole northwest, and we should continue the work commenced by the department, and import every year varieties of apples, pears, cherries and plums for trial, in at least a dozen different parts of this state by those who will make the test fair and impartial for the million. Without doubt very many fine varieties of fruit could yet be found in Russia that is not known only locally; for this reason we should obtain trees from many different places.

I will mention a few varieties of some of the different classes. First among the early kinds we have the Transparent class, which are the White and Yellow Transparent,

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Red Duck, Charlottenthaler, Sweet Pear, Pine-apple and others. Of Duchess type we find at least fourteen varieties, some earlier, but more that are a month or more later in season and of better quality than Duchess. I will mention Red Astrachan, White River, Anisette, Glass Green, Berkoff Mushroom, Red Mushroom, German Calville, Pipka, Pendant Ear, Clay Juicy Burr, Water Melon, Summer Lowland and others. Alexander class, some of which are Barloff, Curly Spice, O'Porto, O'Porto Turnip Seedling and Berry. Some of the Anis family are Red, Yellow and Sweet Anis, Russian Green, Cross Apple and Gotman's Bean.

Of the winter kinds we find Anthony, Grandmother, Little Seedling, Russian Green, Red Anis, Lipzig's Borsdorf, Borsdorf, Longfield, Cross, Blackwood, Lord's Apple, and as fruited by some the Arabian. The White Russet if picked early will keep in fair condition until March. I have made drawings of quite a number of varieties with full description of trees and its fruit, and shall continue so to do, of at least the more valuable kinds as they come into season.

DISCUSSION.

Mr. Harris, of Minnesota — Does Mr. Howlett know what he is talking about? When a man like Mr. Tuttle or like Mr. Peffer tells us something about Russian apples we have some confidence in them, but there are men in whom we cannot place any confidence because they have not studied and observed the matter closely enough. Then, there are nurserymen who are no better nor more trustworthy than tree-peddlers. I may say that I am glad to hear this discussion on Russian apples, but I fully expected to see samples of Mr. Tuttle's sixty varieties on exhibition here.

Mr. Tuttle — I wish to say of Mr. Howlett that he is a successful grower of Russian apples and that he has had them for years in an unfavorable location.

Mr. Cotta — While I have much hope in the final success of the experiments that are being made in this direction, and while I have been very much pleased at the exhibit of

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Russian apples made by Baraboo men and others, there is yet one little point against them, and that is that a great majority of these Russian apples are early ripening varieties. There is a reason for this. Our latitude does not compare with the latitude from which these varieties were brought. In Europe, in the latitudes corresponding to our own, oranges are cultivated, while these Russian varieties are flourishing a thousand miles farther north than we are here. We all understand that the latitude has exactly the same power all over the world with regard to climate. The general climate is of course modified by many other circumstances, but much depends upon the latitude and upon the angle at which the sun's rays strike the earth. Consequently, when we take a fruit from 50° north latitude and put it in 43° north latitude it must ripen earlier. There is a time coming when we shall get a good keeping fruit from the varieties that are now being experimented with, but we have not got it yet. The Repka apple that I hear so much about, I understand is too small to become popular with the American people. I think something must be done in the way of cross-seedlings, and parties adopting that method are working in the right direction, I think. But until the time comes when we reach some good results from these experiments, what are we to do in the meantime?

Mr. Plumb — Mr. Peffer's paper was the conclusion of a report and as such will naturally be published in our proceedings. Now Mr. Peffer has doubtless put much time and study on the preparation of this paper and has endeavored to make it correct, but none of us want the report published if there are any errors in it. The fact is, this Russian apple business is a very much tangled up affair. The American Pomological Society has appointed a committee consisting of Prof. Budd and Mr. Gibb to untangle the question for us. I understand that a bulletin containing the results of their studies is to appear in a few days. This bulletin will be from the best authority in the United States and will afford us much information on the subject. It has been suggested to me that Mr. Peffer has got some of the names wrong in his report. I was going to propose that this report be re-

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ferred back to the committee and still kept in its hands. We want his report to be the best thing that can be made of it. As Mr. Huntley is unable to serve, I should like to see Mr. Tuttle serve on this committee in Mr. Huntley's place. If this report is kept in the hands of the committee until it has been thoroughly studied, then when it appears in our volume it will be the best thing we can get. I move that this report be referred back to the committee.

Mr. Tuttle — I am much in favor of this motion for we may find many things next season that would enter into a report.

Mr. Phœnix — May I ask why it is that our reports cannot be got out in less than nine months. I believe our friends in the neighboring states of Minnesota and Iowa, get theirs much earlier than we get ours.

Mr. Watrous, of Iowa — We generally get our reports out by the last of May.

Mr. Harris, of Minnesota — We expect to get our report this year in April.

Mr. Watrous — The bulletin Mr. Plumb spoke of as being compiled by Prof. Budd and Mr. Gibb, is to be out in a few days, I understand.

Mr. Phillips — I wish to say one word with reference to Mr. Plumb's motion. I think we had better wait three year's in getting out this report rather than have something wrong in it when it is published. Let us give the committee time to do their work well. I might say that I had the honor of being with Mr. Peffer and Mr. Gibb when they visited the Baraboo orchards last fall, although Mr. Peffer don't seem to think that my being with them was much of an honor for he didn't mention the fact in his report. I considered it an honor, though. At that time I was quite interested in the Hebernal apple, and I think Mr. Peffer has given a very good description of it in his paper. There was another tree called the Repka with which I was very much taken. I am in favor of Mr. Plumb's motion, for I am in favor of having a good report on these apples when we do have one.

Mr. Kellogg — I am also of the opinion that this report should be laid over until it is perfected.

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The motion that this report be referred back to the committee, such committee to take its own time in the preparation of its final report, was now carried.

Mr. Palmer — I think it would be better to leave Mr. Tuttle off from this committee, for it would clear him from all criticisms that might rise from his being a leading grower of these Russian varieties.

On motion Mr. Phillips was added to the committee in place of Mr. Huntley.

Mr. Plumb — I did not make this motion to cut off discussion on this subject but simply to dispose of it. Let us hear from the gentlemen from the Iowa Society on the subject. I call on Mr. Patten.

Mr. Patten — This subject of fruit growing has become a large subject and we can afford to look over all points and obtain all information possible on the question. I have been somewhat interested in listening to the remarks made relative to fruit doing well on the eastern border of Wisconsin and not on its western border. It is so in Iowa, only the variance is between the southern and northern borders. When we go to the southern border we find varieties doing well there that have come from the south. The last report from that section is favorable to the Yellow Twig, and Ben Davis, while in the northern part of the state they are failures. Now, then, my judgment is that we have overlooked a very important point in the study of these Russian varieties. They are a long way from home when they reach us. If one variety will not do well when removed a distance on only one hundred miles, we should not expect that these Russian varieties are going to do what was once expected of them. We have really asked too much of them. It is a fact well known by students of horticulture that varieties going from north to south lose their character. They ripen earlier. Hence, we can account for the reason why our Russians are so poor in quality. Good ones are exceptions. We have heard from Mr. Peffer's report that very nearly all are summer fruits, but they will do until we can get something better. These are all general remarks.

Now as to a little matter of experience. It must be noted

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that Mr. Tuttle has a very favorable location in Wisconsin, as far north as he is. I have had experience in this matter for some years. Ten years ago I planted some Russian obtained from the department of agriculture, from Vermont, from Russia and from Mr. Tuttle. In Iowa, where I live, the Golden Russet barely lives. I learned horticulture in this state. I took the varieties recommended in this state and found they were not a success with me. They have been a failure there but have been a success here and in Michigan. Now, then, we see how our own varieties of apples have done.

I will refer to the Repka. It is a good tree here, but is not hardy with me, and if it is hardy, it would never suit the American idea of an apple tree. The American wants something large, and I believe he is going to get it. I will now speak of the Antonovka. They were brought into the country by the department. I have fruited it but very little, but have it on my ground in trees from two to three feet high. In Russia this variety of apple extends over a larger area than any other apple, and it is reported as being of really superior growth in that country. We see what the climate does for it in our country. These Russians have generally been hardy bearers. I do not wish to discourage any one from trying these apples. They must be tried in some places, but where we can raise better ones by all means let us do so. I could really wish that a committee of gentlemen from your society could see the Russians as they stand on my ground, at an age of ten years.

Mr. Tuttle — Are any of them grafted on crabs?

Mr. Patten — Some of them are grafted on crabs.

Mr. Tuttle — That would spoil any apple.

Mr. Patten — I wish to speak of the Anisovka apple. That apple standing near the Antonovka and under the same treatment is as large again as the Antonovka, and while last winter nearly killed the Antonovka the Anisovka is all right. The fruit is about the size of the Duchess, yellowish in color, almost sweetish; is an early apple, its catalogue number is 185. I believe that it would be a valuable acquisition. There is also another one, number 455, which I have

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not yet fruited, but of all my Russians it is the hardiest. The Russians I have found are not good for top grafting on the Haas. Again, there are trees fourteen years old in Minnesota, some on young roots and some of them top worked, but none of them have been very productive. Now, gentlemen, while I do not wish to say anything discouraging, yet I think we must take everything into account in making up our minds as to the value of these apples. I wish to say something as to seedlings. A number of years ago I planted some seeds of the Duchess. I have now one tree from the planting which has stood all the hard winters as well as the Duchess of Oldenberg. It is its equal as an eating apple and as a cooking apple is its superior. I have another seedling from the Golden Russet. I have brought along some cuttings from these trees in order that you might see how these seedlings have done where the older varieties have been wiped out. I have not fruited many of these seedlings as yet. They have outstripped the older varieties and that is what I expected they would do. By free crosses with our own varieties in every locality according as fruit does there, we can produce fruit far superior to anything we now have. In our state we have offered a large premium for the production of a new variety that shall stand the test for hardiness. I believe it has created an era in fruit-growing.

Mr. Hoxie — I have listened for years to the discussions on this subject and I have always been in favor of the idea just spoken of. I visited the orchard of a gentleman in Grant county a year ago last summer, and while there noted the vigorous growth of the seedlings in the orchard. I have since wanted to know how these trees have succeeded, would like to have Mr. Morgan tell us. I think we ought to get seedlings of our own if we can.

Mr. Morgan — I have only a few words to say in relation to some seedlings I have among my trees, and of which Mr. Hoxie speaks. Some twenty-five or thirty years ago I went to a cider mill and got some apple seeds which I planted. I now have in my yard seven sour apple trees that produce very good cooking and eating apples, which are also very

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good keepers. I also have two or three varieties of sweet apples which are about the size of the Talman Sweet, but more tender in texture. They wintered last winter without any injury whatever, but of course we are near the south line of the state. The sweet apple trees did not bear last summer, but the sour apple trees produced favorably this last year. This is all I can say about my seedlings. They are about thirty miles south of their original location. The trees that bear sour apples bear every year, some years more abundantly than others. The sweet apple trees seem to bear every other year.

Mr. Hoxie — I can testify to the quality of these apples, and a year ago last summer the sour apple trees were loaded down with fruit.

Mr. Tuttle — I wish to say that we have found to-day a new fault with the Duchess, and that is that it is an early bearer. Quite a number of varieties are all very early and very abundant bearers. A gentleman from Minnesota told me that he had about twenty varieties of the Russians, and a year ago last winter every tree was killed except his Russians. As regards quality we certainly have as good apples among the Russians as any that are grown, unless I except the Early June. It seems strange to me that a man who recommends the Duchess can go against the Russians. We certainly have among the Russians several varieties that are very nice apples in quality. Some of them are the very best I know. I would like to know where you can get an apple that will sell beside the Transparent. It has everywhere been placed at the head of early apples. The Transparent is an early apple and of good quality. The Red June is a fruit that never scabs. Then there is the Golden White and White Russian and others of good quality enough for eating. I think it very strange that a man should speak of an apple being sub-acid, and yet a cooking apple. I think a cooking apple should be acid.

Mr. Roe — I think we are trying to move forward on two lines. There is nothing that I have seen in the Russian apples that compares with the seedlings of Waupaca county. In 1870 I planted seed of several varieties and now

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have a Golden Russet which fruited last year and the tree stood the winter well. The Talman Sweet was not much killed back and the Duchess seedling was in perfect condition. Trees standing right next to these trees were entirely killed. I had used Transcendent trees as stocks for working in the Duchess. I mention this because I am testing before I propagate. The location of my trees was not a high one. The soil and location were not such as would warrant a long-lived tree. The fruit of the seeding Duchess kept until the middle of February.

Mr. Phœnix—I want to say that these seedlings are not up to the iron-clad standard. I do wish we might move in that direction however. I am a nurseryman and I wish the country was covered with seedlings from which we might pick. We cannot get along in this way for the reason that we do not sow seed enough. Everybody used to raise seedlings and we used to get our best apples then. They have never been equalled. The Spitzenbergen and its equals filled the market the best of any kinds. How are we going to get apples again equal to these except from seedlings? In the meantime I will work with everything I can to bridge over this cleft. There is but one resort, however, and that is through seedlings. We should stick to the iron-clads, however. I think the iron-clads are better for their seeds than for their apples. Keep their seed and put it into the ground for raising apples that shall put us up with any region of the country. We have everything necessary for raising such apples. Now shall we do our part; that is the question. I am a nurseryman, but I want to help the people out. Don't let us wander around any longer, but let us make towards the direction we should.

A motion was made and carried that when the convention adjourn it adjourn until to-morrow morning at nine o'clock.

Secretary Adams—The constitution requires that the executive committee shall fix the time and place of our summer meeting. The executive committee would like to have an expression of opinion on this matter to day. Would it not be better to put this expression in the form of a motion so that the committee may be guided?

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Mr. Phillips — I move that it be the sense of the society that the next summer meeting be held at Oshkosh.

The motion was carried.

A motion to adjourn until 9 o'clock to-morrow morning was now carried, and the convention adjourned.

MORNING SESSION.

WEDNESDAY, February 3, 1886.

The society was called to order by President Smith.

A motion was made and carried that the resolution to hold the summer meeting at Oshkosh be re-considered.

President Smith — I think Mr. Kellogg should have a hearing on this subject. He was absent at the time the vote was taken, and neither the secretary nor myself noticed it.

Mr. Roe — I have no objection to this vote being taken. We are not strongly pressing our desire to receive the society at Oshkosh. We may be better ready for the society a year from this time than we are now. Inasmuch as Mr. Kellogg specially desires the re-consideration, I am willing to waive whatever little advantage we may have from the resolution of yesterday.

President Smith — The executive committee thought that the Oshkosh society would be willing to wait until a little later in the season, and the society would then go to Janesville for its meeting in June. The executive committee are willing to do their part toward bringing about such a second meeting at Oshkosh.

The motion to re-consider was carried by a rising vote.

Mr. Kellogg — I want to present my invitation again for the society to meet at Janesville, in June. With respect to your reception I can say that before starting for Madison, I spent three hours and received promises of entertainment for seventeen members, and I know I can procure entertaiment for all that come. One man in Janesville paid $65 to help out another convention, and there are others who will help and we have money in our treasury there. We can make out free entertainment for all. As is well known to many there is another point which should be considered; and that is the

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opportunity to see the condition of the seedlings on S. W. Lowdon's grounds at that time.

Mr. Hatch — The acceptance of Mr. Kellogg's invitation will not discommode Oshkosh people in the least. We could complete arrangements for holding a meeting with them at the time of the Northern Fair. I think this plan would give Oshkosh people a better chance to concentrate their forces and thus to do better for themselves.

Mr. Roe — Let the society come at any time and whether 17 or 1,700 strong. I can guarrantee that in two hours' time I can secure entertainment for all.

Secretary Adams — We all appreciate the generous position of Mr. Roe. Can we not get a better show in October? I think I should rather have a show in October than at any other time. Then we can have grapes, apples, and flowers on exhibition. We might do this gentlemen, have a June meeting at Janesville and a fall meeting at Oshkosh.

Mr. Hatch — The society would have horticultural opportunites at Janesville for there are many things there that we want to look into. So there would be no harm in accepting Mr. Kellogg's invitation and in making arrangements to meet at Oshkosh as soon as possible. I move that our June meeting be held at Janesville. Carried.

Mr. Hatch — I move that a fall meeting and exhibition be held at Oshkosh, provided suitable arrangements can be made.

Mr. Tuttle — It seems to me this motion is unnecessary for we can make these arrangements at our meeting in June.

President Smith — If the motion prevails at this time it will give the Oshkosh people more time to make arrangements.

Mr. Hatch's motion in favor of a fall meeting, was now carried.

Mr. Hatch introduced the following resolution in favor of the establishment of a Pomological Division in the Department of Agriculture:

Resolved, That it is the desire of this Society that there shall be established in the U. S. Department of Agriculture, a Division of Pomology, which shall be under the supervision of the Commissioner of Agriculture;

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and that congress shall by an act create and establish such division at the earliest day possible, and appropriate funds amply sufficient to carry forward the work of advancing the interests of pomology in the United States.

Resolved, That we who represent the horticulture of the state of Wisconsin, feel in a special degree, the urgency of calling to our aid every possible means to overcome the obstacles which are met by every fruit grower in the northwest, and believe that a pomological division would be of material aid to us. And further

Resolved, That we urge upon our senators and representatives now in congress, their most careful and favorable attention to this matter when it may be presented to them for action; and that our secretary is hereby instructed to forward a copy of these resolutions to each of them.

The adoption of the resolution was moved.

Mr. Van Deman — In connection with this resolution. I should like to say that, as many of you know, Mr. Colman has already taken steps in this direction. He has appointed a pomologist to the department. But this desire and intention is, if possible, to get an act passed by congress of the sort indicated in the resolution so that, as he says, pomology may be ground into the department so that future commissioners not favorable to the project may not be able to get rid of it. It is but just that pomology should have a standing in the United States comparative with the pomological interests of the country. I wish to say right here that my purpose in coming up under the direction of Commissioner Colman is to become acquainted with the people of this great state, and to get your sympathy with our aim in this work. I am your servant, and I wish you to use me as such. If there is any way in which I can serve you by correspondence, I hope you will make free to use me. I hope to be able to make another trip to your state in the summer when things are in a growing condition. That a great deal of damage to your fruit interests has been done and is being done can be readily seen.

There is another matter I should like to mention. When this bill comes up for consideration, I hope the president of your society and all who are interested in the establishment of this division will write personally to your congressmen so that when the bill comes up for final action they will be

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prepared for it. If this thing can be accomplished in this way we may get something from the measure.

Mr. Phœnix — Is it the intention to confine the work of this division to pomology?

Mr. Van Deman — There is already a division of horticulture of which Mr. Sanders is the head. The proposed division is meant to be strictly pomological.

The resolutions were now adopted by a unanimous vote

Professor Burrill was introduced by President Smith and said: I thank you for the honor conferred upon me by this vote, and I assure you I esteem it as such. I deem it a misfortune that I have never been able to meet you before, but good fortune to-day that it is my privilege to meet with you now.

I come from a region of the country where there is a good deal done about horticulture. I have been myself for twenty-five years interested in a good many different directions in this wide, broad, interesting, absorbing topic, which is good enough and big enough to take any one's absorbing interest in its practical or theoretical bearings. Whichever side is dealt with, we cannot help but look. I have always found horticulturists good students of nature. It has been my work to dive down into what seem to be the hidden mysteries of nature and we never come to the end of them. During my study I have tried to get at one of these mysteries. There are minute inconceivably small things at work which are doing great damage. Things that we cannot see affect us, and affect us wonderfully in their work. I shall not take the time of the meeting now to talk about these, but I shall be pleased to meet and talk with you.

President Smith — I presume there is no gentleman in the United States so well posted on this subject of bacteria as Prof. Burrill and I think we would do well to set a time to hear him.

After a considerable discussion, it was decided to listen to Professor Burrill at this juncture, instead of deferring it until this afternoon or to-morrow.

Professor Burrill — I suppose I ought to thank you again for this honor. I certainly ought to have an interest in the

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subject mentioned, for I have given to the subject of bacteria a considerable time and study. I am at a loss, however, to know what it is best to do in this half hour you have granted for the consideration of the subject. You certainly want to know the relation that bacteria bear to fruit growing. It is impossible for a man who does not have the facilities for the study of minute organisms to know much about them. In fact not much has been known about such organisms until lately. It was not until 1847 that great improvements were made in microscopes which thus made such study possible. These minute organisms are everywhere about us, even here in this room in prodigious numbers, in the cracks in the floor, in the air about us, and even in your mouths. They are here in great numbers and they are everywhere, especially in summer, in decaying material. They infest all decaying things and take part in all the changes affecting dead matter. After life has passed away from any plant or animal, then other living things take possession of it and accomplish the changes met with. Otherwise there would be no changes. You are perhaps not ready to accept the idea that apples or meat, or other things would not spoil unless there were minute things working changes in them. We have come to a conclusion that all dead matter tends to corruption, but such is not the case. No wood rots, no meat putrifies, no milk sours, no manure ferments, no change of that nature ever takes place without the influence of these little things. The more there are the more changes will be due to them.

No doubt many of you could furnish from your own mouths samples of these little beings that would be astonishing to you. If you examine the tongue you will find it swarming with life. These little things are minute, small of structure, low in organism but are active in their movements. We say such things must be animals as we watch them moving about as they do in a drop of water placed between two plates of glass and squeezed until it is a mere film in which, however these little bodies have oceans of room for motion. It is an absording thing to watch them. The simple fact that they possess the quality of motion

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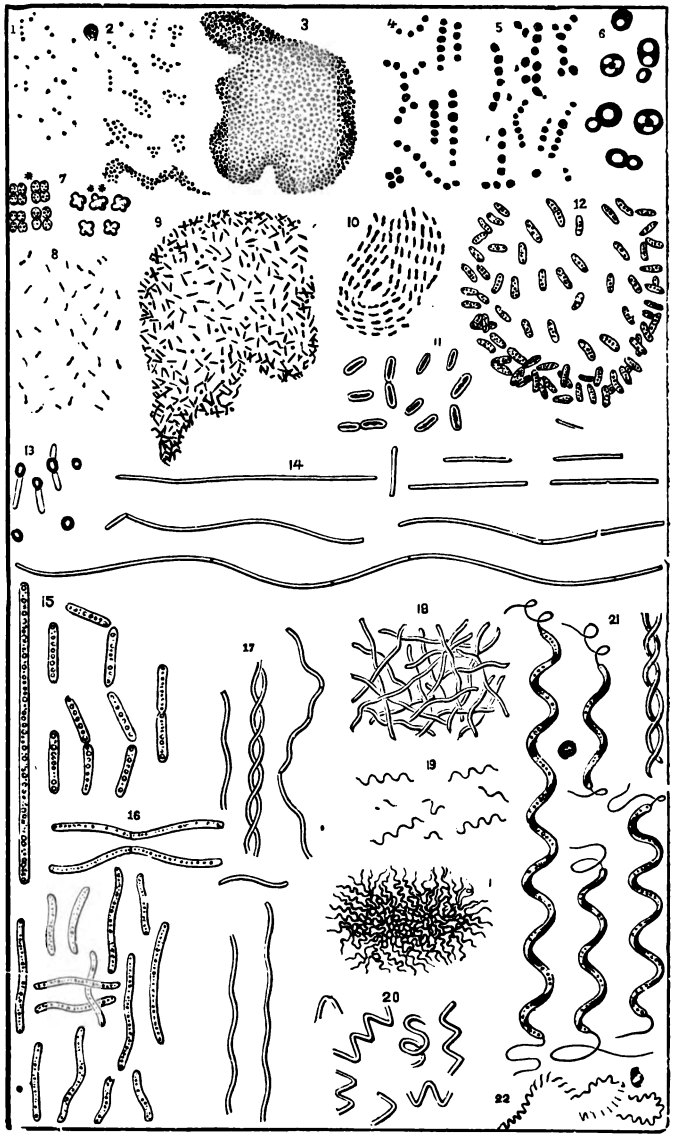
does not argue that they are animals, however. The fact is that bacteria are made up of single cells just like ordinary vegetation. They do not unite, however. Each cell is composed of an outer cell and an inner cell. The outer cell is made of woody material.



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Secretary Adams — Do bacteria then have organisms inferior to animal organisms?

Prof. Burrill — I was about to say that their whole structure allies them to low plant life and not to animal at all. The motion that is noticed is a very common thing in plants of a low order. But these little things have to do it with living things as well as dead ones. They have an influence in the two ways of physiology and of pathology, of the elements of life and the elements of disease. It is probably not a good thing for us to know all the processes going on within us. We all like to think that digestion is something done by ourselves. Yet the evidence points more and more to the fact that most of these processes are due to these minute organisms. They are always present in the digestive process. Certain kinds of them live in certain fluids while certain other kinds are killed in the same fluids. It has been proven that fat nitrogeneous materials are produced by these organisms, and all fertile soils contain certain kinds of bacteria. Anything that destroys these, destroys the fertility of the soil, and it will not again become fertile until again infected by these bacteria. In such soils seeds will sprout but cannot get anything for the operations that require nitrogen.

Now, let us turn to the matter of diseases produced by these little things. Perhaps the easiest thing to do is to state that many of the diseases of the animal kingdom are due to bacteria. Sometimes a perfectly sound body under ordinary circumstances will succumb when subjected to something of this kind. It does not take an unhealthy man to catch the small-pox. Small-pox is due to one form of these organisms. These organisms are sufficiently able to overcome the vital force of the human body and to prostrate it by disease. You will say that many persons do not take small-pox although exposed to it. In a great many diseases a thoroughly constituted human being can live through it unless something happens to him. By the processes of natural selection we may yet hope to beat these little things. Many diseases that are contagious are not generally considered so. Consumption has not been fully

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recognized as a thing that may pass from individual to individual, and yet it is a matter as positively established as that apples may be grown from seeds. It has been watched just as certainly as anything has.

As to the matter of diseases in plants: It was never supposed that the life of plants was in any way affected by bacteria until six years ago in 1880, which is a very recent date. Since then quite a number of diseases, some six or eight, have been so well proven by experimental processes to be due to bacteria that we say that it is certain that bacteria do cause diseases in plants. It is certain also that these diseases will go in a plant if the organisms are once introduced. It does not take a weak plant to succumb, although it is generally so that the weak plants are attacked. Bacteria generally wait for their opportunity.

Now, for instance, pear blight has been mentioned as one of the diseases caused by bacteria. The thing called fire-blight in pear and apple trees is directly due to a very minute form of bacteria. This is as much proved as anything can be. To be sure this disease is seen at a very short notice. To be sure it comes almost in a night. Sometimes the very next day after looking at a tree and finding it all right, it can be seen that these things have been at work. We have done well to give the disease the name of fire-blight from the suddenness of its appearance, but only from its appearance. We may take a minute quantity of virus from a diseased tree and inject it into a healthy tree, and the healthy tree will become affected also. If we pass a knife with some of this virus on its point through a flame and make a puncture then the disease will not appear. The disease may be introduced in other ways. Mr. Peffer was the first to show that this blight begins in the tender portion of the blossom as it unfolds.

Mr. Phœnix — Do you not find bacteria in healthy subjects?

Prof. Burrill — Not at all.

Mr. Phœnix — Do you find anything that will neutralize them; anything that will kill them before their evil effect appears?

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Prof. Burrill — That is a very interesting question. We hope to have control over them. While I stated that you could furnish an abundance of samples of these bacteria from your own persons, there is nothing of the kind in the plant. There are animals, however, that have in their flesh certain of these organisms living as parasites. The human blood has nothing of the kind in it. We do not depend upon the microscope for this assertion. We know from still more accurate methods that smaller organisms than these bacteria are not in existence. But this matter of control over bacteria is a very important thing.

Mr. Phœnix — Why can't we vaccinate for disease in plants as well as in animals? Can't we get a Pasteur's cure for plant diseases? Can't we vaccinate as well for health as for disease?

Prof. Burrill — I believe that human life is going to be lengthened as science advances. Can we do the same thing for plant life as for animal life? I am sorry to say, no. We have got to suit ourselves to the plant structure. I have tried to find out if it is practicable to kill these things when they are once in a plant by putting in things into the circulation of the plant that will kill these bacteria. The evidence is entirely against it. We cannot overcome bacteria if they once get in.

Question — Have you tried everything?

Prof. Burrill — By no means. I should like to find I am wrong about the matter.

Mr. Plumb — I should like to ask if you have used the knowledge you have obtained in giving practical information to others? Have you no advice to give to tree planters as to how to plant trees?

Prof. Burrill — Nothing, sir, more than to grow trees in soils and under conditions that are best for them. The only thing that can be said is to grow your trees in such circumstances as shall give a good, healthy, normal growth. By no means starve them. You cannot starve bacteria out. Do not dispair of getting at them in some way, however, although you cannot reach them by vegetable vaccination. You can get at them by prevention. My trees are frequently

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attacked by blight but they always come along nicely by simply taking off the diseased parts; looking to it always that I do not distribute the disease in pruning. A nurseryman may in cutting scions get a blighted one and in cutting it off the virus may be transferred to other scions and all of the cuts may thus be injured, while if a man is up to it he may stop the injury. There are other plant diseases than fire blight that can be stopped in this way. It will not do simply to cut off the dead limb but you must cut it off as far down as the discoloration of the inner green bark reaches. In doing this, you must look out that you do not simply spread the disease.

Mr. Phœnix — Can we not break off the diseased parts?

Prof. Burrill — That can be done, but if a knife is used the surface will heal more readily. If the cut is covered with varnish it is better. All this means a great deal of work, but we cannot get along without a great deal of work, gentlemen. Root pruning has been tried, and although it worked well in some places it has worked very badly in others.

Mr. Kellogg — Is it possible to be sure that we have got below the bacteria?

Prof. Burrill — Perfectly, sir, by just looking below the outside bark.

Mr. Hatch — Is it true that bacteria are a part of the spore life of fungus?

Prof. Burrill — It is a thing by itself. Bacteria are a part of fungus growths, but are a distinct thing. Spores of fungus are different from bacteria although bacteria are a part of fungus.

Mr. Hatch — Is it not true that fungus develops in a hot and humid atmosphere? Can we not connect the growths of bacteria also with heat and humidity?

Prof. Burrill — The idea prevails that under favorable conditions bacteria may spring into existence, but, in fact, the same law prevails as in animal life. Every organism has its own law of propagation, and no bacteria originate contrary to such a law.

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Mr. Hatch — One more question. Is there any possibility of blight bacteria developing into mould?

Prof. Burrill — Not at all.

Mr. Toole — I was very much interested in the question of fermentation, and Mr. Trelease advised me to write to Prof. Burrill for a pamphlet published by him on that subject. I recommend that we buy copies of this pamphlet for ourselves.

Mr. Phœnix — Is there not some way of getting some anti-bacteria remedy? Is there not something in the direction of sulphur-dust or lime-dust that will prevent their ravages?

Prof. Burrill — There are diseases that can be prevented in this way. Something that is introduced into a tree from a puncture cannot be stopped in this way. I take it that blight is taken from one tree to another by insects or birds. The virous is introduced into a healthy tree by puncturing and lime-dust or similar remedies cannot get into the interior of the tree.

Mr. Plumb moved that the thanks of the society be extended to Prof. Burrill for his interesting address. Unanimously carried.

The society then listened to the report of the committee on re-districting the state. This report, which was read by Mr. Plumb, was illustrated by means of a large map on which were drawn colored lines showing the proposed districts.

Mr. Hatch attacked Mr. Plumb's plan. He said: In Richland county we have deep valleys and high hills. The soil varies from sand to clay. If you want to divide the county on natural lines you have got to split it right in two horizontally, and then make it into planes. You can't divide it according to natural lines. It is just like putting us into a sausage machine and grinding us up.

Mr. Plumb — The idea of Mr. Hatch is all very true. But if we have to take all these minor exceptions into consideration it will break the whole system up. All we have got to do is simply to divide the state into districts according to general characteristics. Then we want at least fifty experiment stations in which to test the whole thing.

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Mr. Hatch — If the gentleman thinks that the same geological conditions will present the same results all over, I must say that it is not so.

Mr. Toole — I should like to say that while we must have experiment stations we must also have observers. There was but one observer for the Seventh district. That is too small a number. One person can't cover the grounds. There should be more observers anyway. I do not doubt that geological formation makes some difference in fruit growing.

Mr. Plumb — One more word on this question; Mr. Toole has advanced the idea that we want more observers. In answer to that I would say it is very hard to secure much work among fifty observers. Unless there was one man to gather up the whole thing we would get only twenty-five or thirty reports.

Mr. Phœnix — If these districts are not to be a convenience in handling the subject of course we don't want them. I thought that lines could be formed that would enable us to handle the state more easily. If they do not, then I would be in favor of withdrawing them and putting the whole subject into the hands of a committee of the whole state.

The society now turned to the revision of the fruit list. The list of seven varieties of apples best adapted for general culture in Wisconsin was first taken up.

Mr. Hatch was in favor of the society not recommending anything, but of the society simply presenting the facts from which the people could draw their own conclusions. He thought a note to this effect should also be appended to tho fruit list. He said that the society had been compelled to go back on all its previous recommendations and he thought it would proceed more consistently not to recommend anything positively.

Mr. Tuttle — I move that we recommend the Duchess of Oldenburg for general cultivation.

Mr. Palmer — It seems to me that we should recommend something or the outlook will be discouraging. We ought to make a list of those trees that have given the best satisfaction so far, and then recommend the people to set trees of a certain nature.

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The motion to recommend the Duchess was carried by a unanimous vote.

A motion was now made to recommend the Wealthy.

Mr. Tuttle — I should not recommend trees that are dead all over the state. My idea would be to recommend the Duchess and perhaps the Wealthy. All over the southern part of the state the Wealthy is probably perfectly safe.

Mr. Hatch — Mr. Tuttle says he would recommend the Duchess and Wealthy. I would also recommend the McMahon for trial. This apple ought to be reaching manhood pretty soon. It has been in its swaddling clothes long enough. Four times the McMahon has stood the test of our severest winters. There is not one that will stand the test better than the McMahon. It is being fruited in Milwaukee, Richland and La Crosse counties, and in Minnesota and Iowa.

It was voted to recommend the Wealthy.

A motion was made to strike the Pewaukee from the list.

Mr. Roe said that the apple had stood with him.

Mr. Kellogg thought that it should be transferred to the Lake Shore list.

On the first vote on the motion the house was closely divided. On taking the rising vote, there were seven for and seven against the motion. Mr. Hirschinging withdrew his vote in favor of the motion and changed it to the other side, thus retaining the Pewaukee on the list.

A motion was made and carried by a small majority to strike Plumb's Cider from the list for general cultivation.

A motion that Tallman Sweet was also carried by a small majority.

It was then decided to retain the Winter Red.

A motion to add the McMahon to the list was carried.

Mr. Palmer moved that the Yellow Transparent be added to the list also. Mr. Tuttle stated that there was no difference between the two Transparents and the Red Duck. The apple originally came from a little place in Russia. Mr. Hatch thought the name should be Yellow Transparent. The tree had killed on the trunk with him and he had lost a numher of trees in that manner. Others said that the

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tree had not injured in the least with them. By unanimous vote the Yellow Transparent was added to the list.

It was thought by some that the Longfields should also be added to the list. Mr. Tuttle was not in favor of adding another Russian to the list.

Mr. Phœnix — I should like to ask Mr. Tuttle one question. Would the Longfield be the next Russian you would recommend for general cultivation?

Mr. Tuttle — The Longfield has proven more hardy than the Wealthy. I am in favor of adding the Yellow Transparent to the list because it is known all over the state.

A motion was now made to adopt the second group on the fruit list as a whole. A motion was made to amend by striking the Walbridge from the list. Mr. Roe said the tree had done well with him, and Mr. Smith said it was the best tree in his orchard. In Mr. Palmer's orchard the Walbridge had not been injured at all. Mr. Tuttle said, he had trees of that kind that had been planted for ten years, but had not borne an apple. A neighbor of Mr. Tuttle's had told him, however, that the Walbridge was his best tree the last year, although it had never borne before. Mr. Tuttle thought perhaps, the time would come when it will do well by us again. It seems to be a hardy tree. The motion to strike the Walbridge out was not carried. Some one remarked that it was "a mighty good tree for a nurseryman to sell, but a mighty poor one for a farmer to plant."

Mr. Pilgrim — I saw trees last year of this kind that were just loaded down with fruit. Mr. Peffer now moved as an amendment to the original motion, that the Plumb's Cider be added to the list, adapted to special locations. This amendment was carried against quite strong opposition. The whole list with the addition of Plumb's Cider was now adopted as it stood.

As a list for cultivation on sandy soils the Duchess and Fall Spitzenberg were unanimously recommended.

Mr. Barnes thought a statement should be incorporated in the notes to the list, to the effect that the society recommends but few varieties, and those suitable to the location.

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Mr. Plumb stated that the substance of such a statement was already contained in the notes.

A motion to reconsider the vote retaining the Pewaukee in the first list was now carried. Mr. Jeffries thought the apple was in its right place now. Mr. Hatch moved that the Pewaukee be taken from the first list and added to the second.

Mr. Kellogg — Those who are in favor of retaining this apple in the first list are in favorable locations. I have no objection to retaining it for favorable locations, but for the general list we should not have it.

Mr. Hatch — This question rests right here. The first list is for the state at large. Milwaukee county is not the state of Wisconsin. Mr. Peffer and Mr. Pilgrim, who are in favor of retaining the Pewaukee on the first list, are both from Milwaukee county. The apple will do for Milwaukee county, but not for Wisconsin.

Mr. Tuttle — I have stood for the Pewaukee until within the last two or three years. Orchards of it for a few years have been failing. I gave a man four hundred Pewaukees and they came through the winter all right, but the trees that have come to bear are pretty generally failures. Now is the time for them to be of value and they have failed. I believed at first that the Pewaukee would do for general cultivation in the state, but the lake shore people can grow trees that we cannot grow at all. It would be follow for us to recommend as hardy, that which has failed as this tree has.

Mr. Pilgrim — We don't feel as though we were all of Wisconsin, but just a small part of it. One friend that spoke of our county, is made up of gas but I am made up of solids. How about the McMahon? That belongs only to certain parts of the state just as much as the Pewaukee.

Mr. Roe said that he should be able to furnish Pewaukees this year, while the rest of his varieties are entirely gone.

Mr. Plumb — We have not got a Pewaukee left that we expect to pull through, except those from top-grafts. At the same time, though, the Plumb's Cider trees are all right.

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Special location comes in here. The Pewaukee is all right for the lake shore, but not for the state.

Mr. Floyd — I cannot say that I ever tried planting them much, and have since replaced them by other varieties. I have no Plumb's Cider left, and my Tallman Sweet trees are all gone also.

Mr. Pilgrim — I am sorry for the gentleman if he is in such a location that the Tallman Sweet won't grow there.

The motion to add the Pewaukee to the second list was now carried.

The convention now adjourned until half after one o'clock.

AFTERNOON SESSION.

Wednesday, February 3d, 1886.

The convention was called to order by Pres. Smith, and the minutes of the forenoon session read by Secretary Adams.

The revision of the crab apple list was now taken up. Mr. Kellogg moved the adoption of the list as it is.

Mr. Plumb — I think it is premature to put in the Gibb crab because, in the first place, there is no one growing them, and in the second place there is no one that will grow them. They have to be top grafted to do well.

Mr. Kellogg moved that the Gibb be stricken from the list.

Mr. Peffer — I never heard before of the Gibb being tender. I have had orders from all places for it and it must be in nurseries in Minnesota and Wisconsin.

Mr. Plumb — I could not find a nurseryman in Iowa growing them.

Mr. Kellogg — It is enough on the point of hardiness if they stand it in Minnesota. Mr. Kellogg withdrew his motion to strike the Gibb from the list, and a new motion to leave the list as it stood was carried.

Mr. Kellogg — The Spitzenberg crab has been alluded to. If it is well known and hardy, I should have no objection to its being added to the list.

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A voice — It is said to be doing well.

Mr. Hatch said that he had tried the crab for a dozen years and had found it the best of any for winter use, it being of fine quality though rather small. By motion, the Spitzenberg was now also added to the list.

The next business was the revision of the strawberry list.

Mr. Hatch — I can talk of the Windsor Chief strawberry. I had about one-half an acre of seventeen different kinds. I picked $200 worth of berries from the patch, a large portion of them coming from the Windsor Chief which occupied only one-third of the ground. These berries are the largest and finest in the market. It has beaten all other varieties out our way. The right kind of soil for them is a light clay one. I believe if it was put on the right kind of soil it would beat the Crescent. It has a good foliage and won't rust. This is a very important point. In feeding power it has about three times the power of other varieties. I also grow the Wilson, but cannot tell just how much fertilizing they will stand. The Windsor Chief must not be manured so highly as the Wilson. It has a glossy surface, green calyx, round berry, and picks more easily than the Wilson. It makes a very handsome berry when picked.

President Smith — Mr. Hatch sent me some plants of the Windsor Chief and I set them out. On one side of them were the James Vick and on the other side were the Wilson. They bore five times as much as the James Vick and half as much as the Wilson, but they were manured very heavily.

Secretary Adams — I notice from the list that this society has recommended the Longfellow and Mt. Vernon as fertilizers for the Crescent. I think that it is not necessary to do so, especially for farmers. I think the Wilson is the best fertilizer to plant next to the Crescent. It gives some of its own qualities to the other variety.

Mr. Kellogg — I think the object of the two being mentioned was that they are considered good for late fertilizers.

Secretary Adams — The idea is right here. People will think they must get the Longfellow and Mt. Vernon, while in fact, I think the Wilson is ahead of either of them. The

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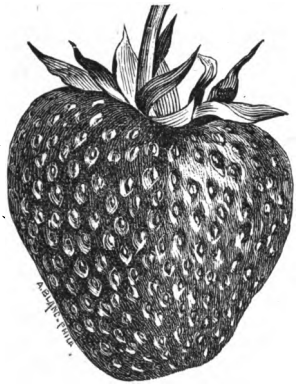
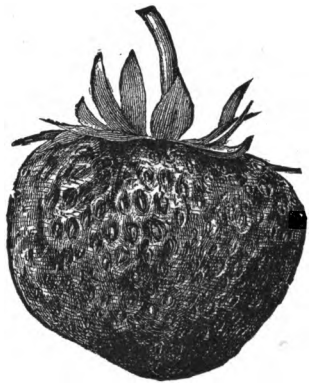
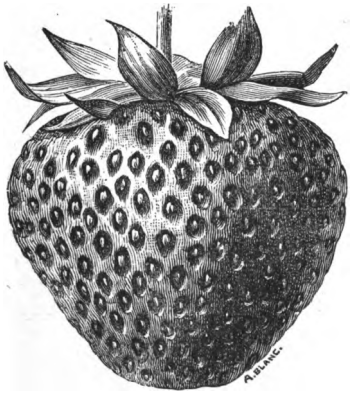


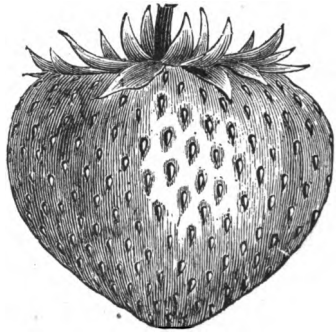
Crescent.



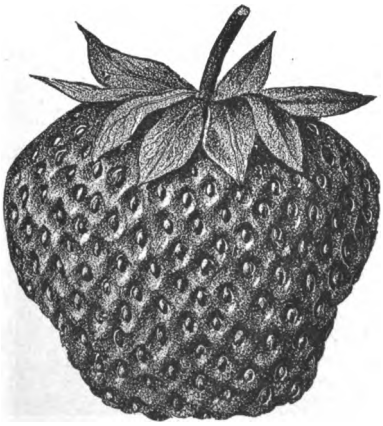
Mt. Vernon.



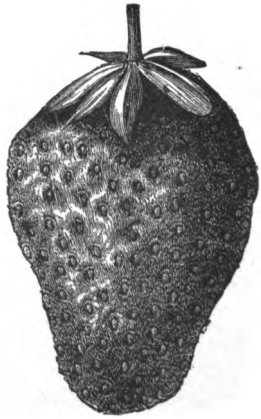
Manchester.



Cumberland.



Sharpless.



Bidwell.

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people should not be led to buy these varieties unless they need them.

Mr. Kellogg moved that words in the list be stricken out in such a way that the Longfellow and Mt. Vernon should stand simply as members of the list. This motion was carried.

Mr. Kellogg then made a motion that the Manchester be added to the first list, and the second list be stricken out. This was also carried.

The special list for light soils was now taken up and motion was made that it remain as it was.

President Smith — For home use I should retain the Crescent. For market I should not. The Manchester has done the best by me lately.

Mr. Kellogg — We have stricken out the list for trial; but many varieties are being tried everywhere. Mr. Hatch may perhaps be able to tell me something about some variety that some one else has tried and which has failed me.

Mr. Hatch — I don't think we ought to recommend anything for trial. We should simply recommend anyone to try anything they may see fit. I don't believe in recommending for trial because in so doing we leave a loophole open for fraud.

A motion that the special list remain as it was, was now carried.

The next on the fruit list were grapes. Mr. Fox thought, that Moore's Early ought to go at the head. It ripens first, and then the Concord. Mr. Kellogg moved, that Moore's Early head the list, in view of its early ripening, but he wished the basis of classification stated in the report. The motion was carried.

Mr. Kellogg — I move that the Lady be added to that list as a winter grape.

Mr. Hatch — Before you do anything like that, I want to say a word. I think we should do an injury by any such action. Six or eight years of cultivation, has shown this grape to be worthless with me. I have taken up the vines and thrown them away. The motion to add the Lady to

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the list was withdrawn. Mr. Fox said that he could work the Lady successfully and had one hundred vines of it now.

The list for frosty and otherwise unfavorable locations was now taken up, and by motion was left as it was. The list for trial was stricken out.

Mr. Kellogg moved, raspberries being now under consideration, that for general cultivation the Souhegan, Tyler and Gregg be recommended. The motion not being seconded a second motion was made to add the Ohio to the general list.

Mr. Floyd — I regard the Ohio as a much better berry than the Gregg. It produces just as good a crop and it is a stronger grower than the Gregg, and it dries just as well.

Mr. Kellogg — The Ohio is strongly recommended down east. For canning it is a very good thing, but with us it don't pay for picking.

Secretary Adams — We have none of the Ohio on our place But I have heard from many reliable fruit growers that the Ohio is the best black raspberry raised. The early growth enables the bushes to mature their wood better than the Gregg. The judgment of nurserymen is that it is hardier than the Gregg. The motion to place the Ohio on the general list was now carried by a close vote.

The red raspberry list was next taken up. Mr. Kellogg thought the Turner should head the list on account of its hardiness. Other members were opposed to this. A motion to leave the list as it was, was carried. The list of red raspberries for trial was left enchanged, as was also the blackberry list.

The question of pears was next touched upon. Mr. Tuttle said: I have grown pears for twenty-five or thirty years, except for two or three years. I have pear trees to-day that are twenty or twenty-five feet high. The trouble with pear growing is on account of the blight. I would not recommend any man to grow pears for the market. I have never sold pears, but have grown them simply for my own private use. Until last winter my pears were never hurt by cold.

Mr. Pilgrim — We have, in Milwaukee county, pear trees that have stood the storms and blasts for thirty years, and

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that bore last season more than a barrell to a tree. I would give more for a barrel of pears than for five barrels of apples. It is generally known all through our part of the state that we can grow pears. Simply because some localities are not good for pear-growing, we do not want to strike the whole list out for the whole state.

Mr. Phœnix — I have to say that while I could not recommend any of the cultivated sorts except some few varieties. I would not strike out pears any more than apples. First, because pears can be grown in this country and they have been grown here; and, secondly, because we have not tried the right kind of pears for this climate. What I want to say is, that I would give more for a good proof pear seed grown in this country than for a pear tree brought from any other place. We want to start from the seed.

Mr. Plumb — I would move that we leave the list just as it is with the addition of words to show that the list is recommended for the lake shore region only. This motion was carried.

The lists of plums and cherries were, by motion, left as before.

The question of a list of currants was next taken up. The Fay and Victoria were first spoken of. Mr. Phœnix said: All currants stand well with us. I think the Victoria is the best currant of the older kinds.

Mr. Hatch moved that the following currant list be adopted: Red Dutch, White Grape, and Cherry. Mr. Jeffries stated that he had experienced no trouble with currant worms, having kept them off by applying hellebore. Mr. Phœnix said that Paris Green would work in the same manner. Mr. Pilgrim was strongly in favor of the Long Bunch being added to the currant list. He said he spoke on the authority of Mr. Stickney. This fruit grows in long bunches and is a good shipper. President Smith stated he had five hundred bushes of this variety.

Mr. Hatch — The currant question resolves itself into high fertility and high culture. I was at Mr. Stickney's place when he was picking his currants. When he came to the Long Bunch Hollands he said: "I like them because they

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are so late; but I can't recommend them for general culture because they wont please the people." The Victoria is one of the best currants, but is easily affected by mildew. That may be a characteristic of them or not. While we are recommending we might as well recommend something that we are sure of. We cannot recommend the Red Prolific because it is in the hands of a monopoly. Mr. Hatch accepted an amendment to add the Victoria to the list opposed by him and the motion as amended was then carried.

The gooseberry list was next taken up and a motion made that the Houghton be recommended. The Downing was spoken against by Mr. Hatch, who was, however, in favor of the Houghton. He said: "The Houghton did better with me than the Downing. The Downing is a better fruit if you can only make it bear. There is is another variety—the American Cluster. It has borne well with me, but its foliage is not as healthy as that of the Houghton or Downing. This variety has done better in Minnesota though than the Houghton has. The Smith was spoken against as not being as healthy as the Cluster.

A motion was made and carried that the Downing and American Cluster be added to the Houghton.

Mr. Hatch then moved the adoption of the entire tree and shrub list. Which motion was carried, thus ending the revision of the list.

Mr. Hatch stated that the committee on re-districting the state was ready to report. The following report was then read and adopted:

Your committee on re-districting the state would respectfully report as follows:

1st District — Kenosha, Ozaukee, Racine, Milwaukee, Waukesha, Washington, Sheboygan.

2d District — Green, Dane, Jefferson, Rock.

3d District — Grant, Iowa, La Fayette.

4th District — Crawford, Richland, Vernon, La Crosse, Monroe.

5th District — Sauk, Juneau, Adams,

6th District — Columbia, Dodge, Fond du Lac, Green Lake Marquette.

7th District — Calumet, Manitowoc, Brown, Kewaunee, Door.

8th District — Waushara, Winnebago, Waupaca, Outagamie.

9th District — Marathon, Wood, Portage.

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10th District — St. Croix, Price, Dunn, Pepin, Eau Clairo, Buffalo, Trempeleau, Jackson, Clark.

11th District — Burnett, Polk, Barron.

12th District — Chippewa, Taylor, Pierce, Lincoln.

13th District — Langlade, Shawano, Florence, Oconto, Marinette.

14th District — Ashland, Bayfield, Douglas.

Respectfully submitted,

J. C. PLUMB,
GEO. P. PEFFER,
A. L. HATCH,
Committee.

Messrs. Hatch, Adams and Hoxie were appointed a committee with regard to horticultural experiment stations. Mr. Hatch stated that probably during the year there would be many opportunities for the committee to advance the interests of the society, and he asked that the society give suggestions as to the things that the committee had better look to. The committee should be told what to do and what to get at.

Mr. Tuttle — I cannot say that I think we should delay in our experimental work. We don't need to wait for an appropriation. We can appoint men to make experiments, and let them get hold of such materials as they can to make them with, and let them get at it as soon as they can. The right man to have this in charge would be the secretary of the state society. He could so distribute the observers, so that when the results of their experiments were brought together, we shall know something of what can be done in the way of fruit-raising in this state. I think in Minnesota they have no appropriation for this work.

Mr. Smith, of Minnesota — In Minnesota we expend no money in this way, except out of our own funds. We distribute scions, cuttings, etc., to these different experiment stations, and they report soil, location and success to the horticultural society. In that way we think we get a better idea of what the state requires, than by a revision of the fruit list. Who also have an experiment station at the State University and another on the shores of Lake Minnetonka. We should be glad to have delegates from your society come up and see what we are doing at our State University. We

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are to meet there one day next summer to see what Prof. Porter is doing there for horticulture. The other horticultural experiment stations have nothing to do with the state. We pay nothing to them, but they have this advantage, that they get every new variety even before it is tried by our own members. These varieties are tested in all the experiment stations.

Question — How many of these stations report?

Mr. Smith — A great majority of the stations have reported.

Mr. Phœnix — My own idea is that in a multitude of counselors there is safety, if we can get the right kind of men at these experiment stations.

Mr. Kellogg — Minnesota men are a good deal the smartest.

Mr. Smith — We have selected almost every locality in the state.

Mr. Plumb — This division of the state into districts that we have made was brought forward with a view to this very thing.

Mr. Hatch — I want to say one word more on experiment stations. The idea of having a committee was to enable the society to take advantage of all opportunities for the establishment of experiment stations. The mere matter of making experiments all over the state would give us empirical results. I want these considerations to rest on philosophical grounds. Suppose I want to test several kinds of strawberries, and I will furnish specimens. I want to learn the relative feeding powers of these plants. Want to see which takes the most to feed it. I can do that now by sending out to various men. But it is of more importance to apply a scientific fact than to try any number of varieties. If coupled with that we search into the vegetable physiology of the plant; you see we get a philosophical fact that is of great value to us. We want to make use of philosophy to enable us to grow better varieties. I am a living monument of experimental stations. We all want to get on to a greater platform. Now, I want to educate you up to this fact, and I want you to think about it, and I want you to get farther than you have yet. I don't think we are educated up to the

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point of establishing such stations as we should have this year. We ought to be able to get hold of our professors and talk to them about these matters of interest to us. We want to get them to show us our faults and to show us where science can help us.

Mr. Phœnix — I think probably Mr. Hatch was never entirely cured of a bad attack of book farming. I think a very few men might make a lot of queries that would be of service.

Mr. Plumb — Mr. Hatch is all right only he is way over yonder somewhere. I think we should not be in a hurry about it. This matter is worthy of a good deal of money and time. Let us leave this matter to this committee until our June meeting. Let them get the whole scheme adjusted before then and bring it before us.

Mr. Hatch — The committee on the establishment of an experiment station doesn't expect to have anything to do with the committees of observations in the different districts.

Mr. Plumb moved that the selection of committees on observation be referred to the executive committee and the committee on experiment stations. Carried.

Mr Floyd now read his paper on—

HOW TO PROPAGATE AND GROW APPLE TREES.

By H. FLOYD, Berlin.

Perhaps I may seem egotistical to some of you veteran nurserymen in offering a paper on this subject. But I do it in the interests of horticulture. Knowing as I do, that the practice is common among all nurserymen to divide apple roots into from two to four pieces, thus making two to four trees out of each root.

When I first commenced the study of roots, propagation of trees, my first lesson was in helping move a nursery, a part of which were five and six years old seedling apple trees, the rest three and four year old root worked trees. Of the seedlings we only saved the roots, excepting now and then one showing good blood, form, etc., which we saved

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entire. The roots were cut in small pieces, a scion set in the usual way planted in nursery rows at the proper time. At the age of three and four years, were considered quite fair trees, but had a large per cent. of culls among them, most of which were sold and planted but very few of these trees, even the best of them, ever gave satisfactory results.

Another very interesting experiment was made with side or brace roots. These were cut and worked as whole roots, but they declined being anything but brace roots; no good results followed this planting. The last and almost the very best tree of this planting, I dug at five years old; it was one and a fourth inches in diameter at the union, the root was as clean as a carrot and about fourteen feet in length —tree about seven feet high not many branches—was reset with care but did not live to bear fruit.

When I began to plant seeds and grow stock for my own use, I did not cut up roots long. I continued experiments on whole roots, on half roots, on one-fourth roots, and noted the results. Through these experiments, I discovered that every part of a root had an *office* to perform, that *nature* had made no mistake in growing an apple root from ten to fifteen inches long the first year of its life, that the office of the upper portion of a root is to throw out brace roots or surface feeders, the lower part to penetrate the sub-soil and feed from below, thus being able to carry on the work of growing and maturing wood and fruit continuously, wet or dry. Such a tree, secures to itself the benefit of a full season's work, by being able to supply its wants, from moisture in sub-soil, when very dry above in surface soil, thereby perfecting its structural growth, and its *sap* is fully charged with material to start the next season's growth; it is also in best possible condition to carry the tree through a hard winter.

These advantages, important and real as they are, are not all that a whole root worked tree, has over a fractional worked one. The trunks are larger, straighter, with plenty of strong buds, so that you can form a head, high or low, have plenty of branches, from which to form the best possible shaped head. You will never see large limbs starting

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out here and there forming crotches, one sided, or illy shaped tops, the branches of top and root are quite evenly distributed and uniform in size. I think I can tell trees, varieties with which I am acquainted, worked on whole, or fractional roots, as soon as I step into their midst, also those worked on the upper, or lower, portion of a root.

Hence from our experiments with apple roots and trees and our study of the same we conclude, that the practice of dividing apple roots or cutting into short pieces, to work a very damaging one, to horticultural interests, and should be abandoned by all, who would best serve the public.

DISCUSSION.

Mr. Kellogg — I want to resume the discussion of Mr. Floyd's paper now. I think all of Mr. Floyd's experiments spoken of in his paper of no value being tried with only one kind of trees.

Mr. Plumb — I have selected first, second, and third cuts of scions from trees, and I think the question of this growth is simply one of force. Otherwise than this I can see no difference in the relation or form of the roots. The top will eventually give its character to the root.

Mr. Phœnix — One time, when I first started out in the nursery business, I had to help to move a nursery. I was not much acquainted with the business of grafting. I grafted on roots a good deal. I watched these carefully and made up my mind that their growth was not so strong and upright as though they had been made on seedling roots. They were more irregular. On that account I do not call them as good trees in the nursery. They are not as vigorous and first class as those on seedlings. I should not expect to get as strong a growth from a lower cut of a root, as from an upper one. I think I have tried it thoroughly. I took long roots and made four cuts of them, and between the first and second there was no difference at all, a little against the third, and still more against the fourth. Some people say that buds are better than root grafts, but there is no advantage except that you can get a better tree the first year. When you graft iron-clads you want them

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to be below the ground. If I could have iron-clad stocks every time, I should not fear if the stock came above the ground.

Mr. Tuttle — Years ago I used to make but one from a seedling root. Since that time I don't generally make more than two from a root. I can see no difference between the working of the two methods. I grow just as good trees as I ever did when I grafted only from the collar.

Mr. Phœnix — I went south with the idea that top worked trees were better than root grafts, but I had to give it up on trial. I have got over that notion, or hobby, if it was one, and I have no new hobby in its place. I am trying the experiment now of picking out the best iron-clad stock I can get to work on and budding grafts on to them. The only serious objection to this plan I think, is that it makes double the work. I budded some last year with the view of trying it, and hope it will be tried by others also.

Mr. Patten — I wish to call attention to a little experience of my own in 1872 and 1873. This experience was had as well in the western portion of Wisconsin as in Iowa. Those trees that were not root grafted were lost almost entirely in nurseries three or four years old. The benefits of Mr. Floyd's procedure are more than counter-balanced by the fact that we get better strength from scion growths. We see that the top of certain trees give the form to the tree far more than the root does.

Mr. Floyd — Mr. Gibb sent some scions to Wauwatosa to be grafted, and he stipulated that they should be collar worked. I know that the lower parts of roots when cut up do not give satisfaction. While the upper ones bring forth a tree they do not go down deep. I would not undertake to grow trees from the lower parts of the roots for there would be so many culls in them. There is a good deal of satisfaction in having a strong root below. The scion having so large a feeding power below makes a better and stronger growth. You do not get an even top though. If the roots are uniform in size the trees will be almost as fine as the roots are.

The society now adjourned until 7 o'clock this evening.

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EVENING SESSION.

WEDNESDAY, February 3, 1886.

Society met at 7:30 P. M. President Smith in the chair.

Mr. Hatch — If there is nothing else on foot, I have the pleasure to submit the following resolution:

Resolved, That the committee on Observations be requested to report upon the following horticultural subjects in their respective districts:

1st. Conditions of temperature, storms, etc., and their effects.

2nd. Varieties fruited the preceding year.

3rd. Soils, sites and resources.

4th. Fruit lists, showing best selections of all kinds and varieties for the district.

5th. Fruit crops, acreage, markets, prices, etc.

6th. Horticultural exhibitions, meetings and societies.

7th. Fruit growers, nurserymen, seedsmen and gardeners.

8th. Diseases, insects, etc.

9th. Vegetable gardening.

10th. Flower culture, tree and ornamental planting.

11th. Methods of culture, training, and management, worthy of note.

12th. New or specially valuable sorts and their tests with regard to hardiness and adaptation.

Resolved, That the secretary be instructed to procure printed blanks for the purposes above set forth.

Mr. Plumb seconded Mr. Hatch's motion for the adoption of this resolution.

Mr. Phœnix was in favor of an amendment to the resolution, restricting the ground to be covered in the reports and allowing observers to report as far as possible.

Mr. Harris, of Minnesota — I would object to such an amendment. There is no danger of getting too much of a report. These reports are the best thing we get in our state. If you will send me a copy of this farm report I will do the best I can to get a report for the La Crosse district. I wish you would also send a copy to the Minnesota Society.

Mr. Plumb thought the inquiries should be made very plain, or otherwise the reports would be returned without the points being sufficiently covered.

Resolution adopted.

The following committees on observations were now appointed:

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First district — G. P. Peffer, Pewaukee.
Second district — N. N. Palmer, Brodhead.
Third district — G. H. Robbins, Platteville.
Fourth district — Mrs. Ida E. Tilson, West Salem.
Fifth district — Wm. Toole, North Freedom.
Sixth district — A. D. Barnes, Campbellsport.
Seventh district — John Smith, Depere.
Eighth district — Wm. Springer, Fremont.
Ninth district — Henry Isabel, Merrill.
Tenth district — Isaac Clark, Galesville.
Eleventh district — Mrs. H. C. Vaughan, Ashland.
Twelfth district — A. C. Fisk, Bloomer.
Thirteenth district — H. Barnes, Florence.
Mr. Barnes now read his paper on

THE SELECTION OF VARIETIES — HOW TO PLANT AND CARE FOR AN ORCHARD.

By ASA D. BARNES, Campbellsport, Wis.

To all new beginners I would most earnestly entreat you to plant but very few varieties, and of the best adapted to your locality, and to old planters it will not be necessary to for me to caution you on this point, "for 'tis a demonstrated fact that but few varieties of apples, pears, plums and cherries will withstand our arctic winters and sudden changes of weather with an additional cyclone in the summer season, to rack and ruin our trees." Therefore select but few varieties. "Of apples, I would recommend for planting on high, heavy, well under-drained clay lands the following list: Duchess, Snow, Wealthy, Blue Paremane, Golden Russett, Flushing's Spitzenburger and Tallman's Sweet. For light prairie soils, Duchess, Alexander, Haas, Wealthy, Perry Russett, Pewaukee and Tallman Sweet, and for low, damp soils, Tetofski, Duchess, Whitney No. 20, Haas, Wealthy and N. W. Greening, and for very sandy soils plant Tetofski, Duchess, Wealthy, Fall Spitzenburg and Wolf River, and for general cultivation — of *pears none*; of plums, plant De Soto and Lombard, and for *all* occasions plant the Early and Late Richmond cherries.

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Experience and observation has taught me that the same varieties of apples will not do equally well on the same farm, planted on different sites and soils, so it behooves us that design planting, to make this with the selection of a site for an orchard the first consideration. And in one respect at least let us adopt the old maid's rule for making good pie-plant pies. That is to say, put in as many crab apples as our conscience will allow, then close our eyes and dab in another row or two, for they are always hardy and prolific, and some of them very fine fruit for eating and canning, and *all* of them are good for jelly and cider, and I believe the pollen is a valuable fertilizer for the apple blossom.

Now, how to plant and care for the orchard. I shall elaborate at greater length on the apple tree than any other part of the orchard, for I believe it to be the most abused. To begin with, *always* select a *new* site for your young trees. Do not by any means plant young trees where old ones have grown for years and died out, leaving the earth exhausted and poisoned, for it requires certain properties, minerals and alkalies to grow the tree and produce fruit. Nor when they will be shaded by the old trees that remain, for fruit trees like house plants require sunlight.

Prepare your land the same as for corn. Stake off into rows twenty feet apart each way. Dig large holes — the deeper and wider, the better — fill holes nearly full of loose earth on dry, hard lands, and on low, damp soils fill with stones, wood and earth to give drainage to the tree for it is with apple trees as with pears, they will *not thrive* with *wet* feet. Place your tree in hole inclining to the west of south with the heaviest part of the top that way, to shade the body from the sun when it gets large enough to scold. Straighten out all roots and fibres to natural position, bring the earth down carefully with your hands and be sure to crowd the earth under the center of the tree; pack firmly, but be very careful not to break off the roots and small fibres. In finishing up, leave the earth nearly level and quite loose — the better to admit the moisture. Then cover the ground at once with dark colored mulching of some kind and place small stones or sods on the same to prevent

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it from being disturbed by wind or fowls. Plant an evergreen of some kind in the center of each square formed by your fruit trees to assist in breaking up the winds and also to give a healthy stimulant to the fruit blossoms. By planting close together each tree will assist in protecting its neighbor from the winds and storm. Should they all live and grow large enough to interfere with each other you could well afford to distroy one-half of them for they will have paid for themselves time and again.

Seed down to clover — cut the first crop for hay and let the second crop grow up and remain on the land to prevent from sudden thawing and freezing. Remove the mulching at least twice each season and loosen up the earth with a spading fork and replace the mulching as before.

About the first week in September take a garden rake and remove all the mulching and as much of the loose earth as you can — always drawing the rake from the stem of the tree (to prevent breaking the roots) to check the growth of the tree and ripen up the wood for winter.

Just before the ground freezes up return the earth and mulching—making a small mound of earth around the body of the tree. Bind up all small trees with tarred building paper to prevent girdling by mice and rabbits. Keep all stock out of the orchard, unless it might be for a short time in the fall; when it would be advisable to let the hogs in to pick up the wind falls and wormy apples. Do not let your young trees over burden themselves with fruit, but pick the smallest and most inferior apples as soon as they have set, for by so doing the fruit left on the trees will be twice as large and can be gathered with one-half the labor in the fall, and will bring more than three times as much in market; besides it will not burden the tree as much as all the fruit would. Use diligence with good common sense all the way through and *do not steal* off a crop of grass or grain, then turn all the stock on the farm into the orchard to browse the trees while you are putting in your time at the corner store smoking a lovely Havana and cursing the nurserymen, tree agents and country generally, because *we can't raise fruit.*

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DISCUSSION.

Mr. Harris — I never like to criticise a paper by a young man. I should like to ask, however, if Mr. Barnes does not pack the earth around a tree.

Mr. Barnes said he did.

Mr. Harris — I probably misunderstood you. I used to practice removing mulching from around the trees, but do not put the mulching back. It keeps the foot of the tree so warm sometimes that the sap is driven up before the upper part of the tree is ready for it.

Mr. Hatch — There is a great deal of carelessness on the part of tree planters with reference to this point of packing the earth about the roots. Sometime ago I furnished a man with some evergreen trees, and he afterwards said that he could not grow them. I found that he planted them in a little hole in the ground and had not packed the earth about the roots at all.

Mr. Barter — I think that it is a very important rule to pack the earth tightly around the roots of anything. I remember having remarked to a lady friend one day that all a person had to do to grow flowers, was to put the seed in the ground and put his foot on it. It occurred to me that the putting your foot upon it was the important part of the thing.

Mr. Plumb — In Iowa I found a disposition to charge the injury to the tree to the fact that they had no frost in the ground. I was somewhat surprised, for I have never feared open ground. I want the ground in such shape that when the tree does draw on the ground it will have something to draw from. Unless there are changes of atmosphere, when the sun grows strong enough and strikes a tree it is going to begin to grow.

Mr. Hatch — That is an old story about the circulation of the sap. I never saw any circulation of sap until the buds began to show.

Mr. Plumb — As soon as the tree is warmed up, the warmth follows the root along down. This cannot take place if all circulation is cut off by perfect freezing and the tree dies.

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Mr. Tuttle — I can see no chance for a circulation in perfectly frozen roots. My idea of tree killing is that by long continued and severe cold, every particle of moisture is drawn out of the tree and every part of the tree is thus dried up.

The idea of protecting trees by building paper was spoken of, and Mr. Plumb said: I would advise that it be building paper with tar. Mr. Van Deman said: I have tried this plan and tarred paper injured my trees. The paper did not entirely go around the trees and just the parts not covered were all right.

Mr. Kellogg — Was the paper close to the tree?

Mr. Van Deman — Yes, sir.

Mr. Kellogg — If there had been a lining of newspaper between the tarred paper and the tree there would have been no danger.

Mr. Barnes — I secured 200 trees in this manner in Nebraska. I fixed the paper so that it did not touch the trees, and they were all right.

Mr. Phillips — I think the best way to protect trees is with lath, and it is the cheapest way too. It will cost only about one cent to a tree. Leave room between the lath and the tree and then allow the covering to remain until the tree fills it.

Mr. Barnes having spoken highly in praise of the Blue Parmion. Mr. Tuttle said: It depends entirely on the soil whether the Blue Parmion is healthy and hardy or not. On good sandy land the tree is a good bearer. I know trees of this kind that have been growing on sandy land for a long time.

REPORT OF THE COMMITTEE ON AWARDS.

The committee on Awards, now reported as follows:

To the Honorable President and Members of the Wisconsin Horticultural Society:

The undersighed committee selected by you to examine and make awards upon the fruits on exhibition at this convention, would report that we have given them as careful an examination as circumstances would permit and made awards according to our best judgment, but feel very sen-

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sibly in view of our imperfect knowledge of varieties adapted to this state, that we are liable to have made serious mistakes in judgment.

We desire to compliment your enterprising fruit-growers for the very creditable display of apples, grapes and pears placed upon the exhibition tables, as being evidence that the enterprise and push of the northwestern horticulturists will in the near future make this the best apple and grape-producing country in the world.

We have experienced considerable difficulty in comparing the entries for some premiums and would recommend that hereafter entries in each class be placed together.

We cannot neglect this opportunity to call the attention of the people of Wisconsin to the importance of the cranberry interest. We found upon the exhibition tables seven sample varieties of this fruit by S. & A. C. Mills, of Madison, which point to a great improvement in this class of fruit. If its improvement by growing new seedlings by selection and perhaps the crossing of new varieties is made a matter of systematic experiment, the results will open a source of great revenue to the state, and provide in quantities to meet all wants, a most wholesome and necessary addition to our winter fruits.

We would also call the attention of our orchardists to some plates of gnarled and knotty specimens of the Willow Twig apple, exhibited by Geo. J. Kellogg, which show the work of the apple curculio. Unless stringent measures are adopted for the destruction of this insect, the time is near at hand when the raising of smooth and perfect apples will be a thing of the past. We would suggest that it would be a wise act on the part of this society to offer a premium for the most efficient method of exterminating this pest.

JOHN S. HARRIS,
C. L. WATROUS,
J. V. COTTA.
Committee.

PREMIUMS AWARDED AT THE ANNUAL MEETING AT MADISON, FEBRUARY 1-5, 1886.

Largest and best display of fruit of all kinds, Geo. P. Peffer, Pewaukee	$8 00
Second best, Geo. Jeffreys, Milwaukee	4 00
Third best, Chas. Hirschinger, Baraboo	2 00
Largest and best display winter seedling apples, Geo. P. Peffer, Pewaukee	6 00
Second best, Geo. Jeffreys, Milwaukee	3 00
Third best, Chas. Hirschinger, Baraboo	2 00
Largest and best display crab apples, Geo. P. Peffer, Pewaukee	2 00
Second best, Geo. Jeffreys, Milwaukee	1 00
Largest and best display grapes, Wm. Reiter, North Prairie	3 00
Second best, Geo. P. Peffer, Pewaukee	2 00

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Largest and best display pears, Geo. Jeffreys, Milwaukee	$3 00
Second best, Geo. P. Peffer, Pewaukee	2 00
Best display showy apples, not to exceed ten varieties, Geo. Jeffreys, Milwaukee	3 00
Second best, Chas. Hirschinger, Baraboo	2 00

ADAPTED VARIETIES.

Best five winter apples for Wisconsin, Geo. P. Peffer, Pewaukee	$4 00
Second best, Geo. J. Kellogg, Janesville	3 00
Second best, Geo. Jeffreys, Milwaukee	2 00
Best three winter apples for Wisconsin, Geo. Jeffreys, Milwaukee.	3 00
Second best, Geo. J. Kellogg. Janesville	2 00
Third best, Wm. Reid, North Prairie	1 00
Best five fall apples for Wisconsin, Geo. P. Peffer, Pewaukee	3 00
Second best, Geo. Jeffreys, Milwaukee	2 00
Third best, Chas. Hirschinger, Baraboo	1 00

SINGLE PLATES.

Best Winter Seedling Apple, Wm. Springer, Fremont	$1 00
Best Alexander, Geo. P. Peffer, Pewaukee	1 00
Second best, Geo. Jeffreys, Milwaukee	50
Best Fameuse, Geo. P. Peffer, Pewaukee	1 00
Second best, Chas. Hirschinger, Baraboo	50
Best Golden Russet, Geo. Jeffreys, Milwaukee	1 00
Second best, Wm. Reid, North Prairie	50
Best Northern Spy, Geo. Jeffreys, Milwaukee	1 00
Second best, Chas. Hirschinger, Baraboo	50
Best Orange Winter, Chas. Hirschinger, Baraboo	1 00
Best Pewaukee, Geo. P. Peffer, Pewaukee	1 00
Best Plumb's Cider, Geo. P. Peffer, Pewaukee	1 00
Second best, Geo. Jeffreys, Milwaukee	50
Best Rawle's Janet, Geo. Jeffreys, Pewaukee	1 00
Second best, Geo. P. Peffer, Pewaukee	50
Best Red Romanite, Geo. P. Peffer, Pewaukee	1 00
Best Tallman Sweet, Chas. Hirschinger, Baraboo	1 00
Second best, H. F. Marsh, Sun Prairie	50
Best Utter, Geo. J. Kellogg, Janesville	1 00
Second best, Geo. P. Peffer, Pewaukee	50
Best Wealthy, Geo. P. Peffer, Pewaukee	1 00
Second best, Geo. Jeffreys, Milwaukee	50
Best Westfield Seek-no-further, Geo. P. Peffer, Pewaukee	1 00
Second best, Geo, Jeffreys, Milwaukee	50
Best Willow Twig, Geo. J. Kellogg, Janesville	1 00
Second best, Geo. Jeffreys, Milwaukee	50
Best Wolf River, Wm. Springer, Fremont	1 00
Second best, Geo. P. Peffer, Pewaukee	50

DISCRETIONARY.

Best Northwestern Greening, E. W. Daniells, Auroraville	$1 00
Best Haas, Geo. Jeffreys, Milwaukee	1 00
Second best, Geo. P. Peffer, Pewaukee	50
Best Winter Crab, Wm. Springer, Fremont	1 00
Best 5 Seedling Apples, Wm. Springer, Fremont	5 00
Seedling of Tallman Sweet and Duchess, J. P. Roe, Oshkosh	1 00
Best Walbridge, Geo. Jeffreys, Milwaukee	1 00
Best Vandevere Pippin, Geo. Jeffreys, Milwaukee	1 00
Best Twenty ——, Geo. Jeffreys, Milwaukee	1 00
Best White Pippin, Geo. Jeffreys, Milwaukee	1 00
Best Norton's Mellow Blush, Geo. Jeffreys, Milwaukee	1 00
Best Detroit, Geo. Jeffreys, Milwaukee	1 00

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Best Peck's Pleasant, Geo. Jeffreys, Milwaukee	$1 00
Best Perry Russett, Geo. P. P. ffer, Pewaukee	1 00
Best Black Gilliflower, Geo. P. P. ffer, Pewaukee	1 00
Best Clark's Orange, Geo. P. Peffer, Pewaukee	1 00
Best Allen Russett, Geo. P. Peffer, Pewaukee	1 00
Best Paradise, Geo. P. Peffer, Pewaukee	1 00
Best Bellmont Seedling, Geo. P. Peffer, Pewaukee	1 00
Best Bellflower Seedling, Geo. P. Peffer, Pewaukee	1 00
Best Hunt, Geo. P. Peffer, Pewaukee	1 00
Best Phœnix, Geo. P. Peffer, Pewaukee	1 00
Best Pennock, Geo. P. Peffer, Pewaukee	1 00
Best Lyman's Yellow, Geo. P. Peffer, Pewaukee	1 00
Best 2 Seedlings, Geo. J. Kellogg, Janesville	2 00

The following resolution by A. J. Phillips was adopted:

Resolved, That the Wisconsin State Horticultural Society recognizes the valuable service rendered the general interests of agriculture by the State Agricultural Society, and kindred organizations and we hereby pledge them our hearty support and co-operation in their work of educating the rural classes and building up the material interests of the state.

A motion to adjourn until to-morrow afternoon at 2 o'clock, to meet then in assembly chamber was now carried.

AFTERNOON SESSION.

THURSDAY, February 4th, 1886.

The joint meeting was called to order by President Arnold of the Agricultural Society, who called President Smith of the Horticultural Society to the chair.

Mr. B. S. Hoxie read a paper on

THE WHY AND WHAT TO BUILD, OR, OUR HOUSE AND HOME.

Mr. President, Ladies and Gentlemen—In presenting this subject for your consideration at our present meeting, I shall do so from a practical standpoint. Our worthy professors and eminent farmers, and dairymen, bring from their store-house of knowledge, facts in science and of their practice on the farm or elsewhere. And so, as professor of *Jackplane* science, I hope to be of some help to at least a few of my hearers. Every age past supposed that they were living in just the best time; and so they were; for mainly each age and each decade have been an improve-

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ment on the past. And each in their turn have copied, found fault or criticised their predecessors. So it has come about that we, whether rightfully or not, claim our superiority over all preceding, whether in art or science. For whichever way we turn or in whatever department we direct our attention, we discover bungling methods and weak results. In some branches of architectural science and in masonry perhaps, I should make an exception. For nothing has yet excelled in strength and solidity the famous acqueducts of Rome or the beautiful temples of Greece. But the appliances of art and mechanics to accomplish these results are ours to criticise, however much we may admire the finished work.

For as we look over the history of the past in the development of architecture we must attribute to Greece the highest attainment of art, progressive, useful and ornamental for their time. And their great superiority in this respect is traced to the same cause that constituted their pre-eminence in everything else, viz.: *a deep investigation into first principles.* It was, therefore, a rule with them that no public building should be constructed without the superintendence of a master mind. Hence, every structure of this kind must be beautiful in design, harmonious in its parts and adaptability to its uses. They had three essential and distinct qualities in architecture, which every student of that art must conform to, viz.: *strength, grace* and *richness,* or beauty. And it was almost a criminal offence to erect any building that was ugly in design or proportion. So to Greece, perhaps, we are indebted for more than we are willing to give credit for in our arrogance. Yet, for all this, I think we of the present are developing more of *strength* and *beauty of design* with *practical utility of purpose* in our homes than at any previous time. And if we could in some way inculcate that honesty of endeavor which the Grecians possessed in erecting our public buildings, there would be less of such disasters as that which befell our state capitol a year ago. Building in all ages of civilized man has been both an art and a science. Therefore, the *why,* the *what* and the *how* of our house and our home is the subject to which

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I wish to call your attention. I suppose it is true that we as Americans more generally possess our own homes than any other people, and I wish it was more generally true that we build those homes, our houses, for ourselves and our children, instead of so often for strangers and their children.

"For if I build the house it will help sell the place," is too often our undertakings. And so the house is not our *home*, though we stay in it for years; often our children are born and die there, and every year we talk of selling out. If we improve the farm it is only for the advantage of a year or two, and if we make an addition to the house it is only because we *must* have more room for an extra bed or two to accommodate more help.

I wish to assume then that *why* we build is for a *home*, for with the other object in view, it is only a place to live in. Then the house must be our house; wife and I must do the planning, or we must select a plan and make changes to our liking, and if we are not able to complete it all this year or next, it must be planned with reference to that enlarged completion. What I have said as to the adaptability of public buildings must apply to your house, for it must to all purposes be *your* house. For as a practical builder for more than thirty years I never yet built two dwelling houses just alike. I remember once of building a house for a man who had seen one that suited him; so in exterior and interior his house must be like it, but his building site was different, and the house could not front the same way, nor stand in the same relation to other farm buildings, consequently when too late he was not suited with it, though it was a good house. You have perhaps one or two or three thousand dollars that you want to put into a house, and you want to use that money to the best advantage and you want the house to *look* as well as your neighbors, and if he has built first, you want it to look a little better than his, and it possibly may be that this is one reason why you wish to build to show him and the rest of the world that you can beat him on a house. The old down-east or New England style was to build the great square or oblong house, and it had a

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plenty of room inside of the enclosed walls, but as for convenience it might in many cases have all been in one room, for that would have saved the opening and shutting of doors to say the least. It had one good feature and that was the huge chimney in the center with two or three great fireplaces. There was plenty of fresh air if you did have to turn round occasionally to keep both sides warm.

Those old structures still adorn the hillside, and roadside along the highways of the eastern country. The march of improvement has re-modeled and modified some of them, but in many cases what was good enough for father or grandfather will answer for the son if he has not sold out and gone west. With this part I am glad to note the change not only in plan but better modes of construction. And while it is true that great improvements have been made for the better in our modes of construction, there seems to be a sort of careless indifference as to plans and details on the part of those who are about to build a house. Our farmers as a general thing do not see the necessity; or think they cannot afford to pay the expense of plans and specifications from an architect. And I am sorry so say that in too many cases they would be disappointed if they did; for this art until quite recently, has had but very little to do with county or farm buildings; for in fact there has been no inducement for them to do it on the score of paying patronage. But in this there begins to be an improvement, for plans and elevations of farm buildings are being called for and published in some of the trade journals. I have therefore urged in public and to private clients, for those contemplating to build, to spend a day, or days in looking at and comparing the houses of strangers or friends as to general plan and mode of construction, taking paper and note book along, and at your home-leisure carefully compare results, making memorandum and note of such changes as you want in your house.

I have heard of a man and wife who made a minature house of paste-board; first and second floors, every window and door occupying its relative place, and which way to swing to be the most practical. This was their mode of

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doing it, and when the edifice was completed, it was *their* house and home. I know of another very intelligent lady who expects to be the assistant with the husband in building a home next summer; and she has marked out a dozen or more plans, each with some good features, and all practical. When the house is built she will know just how it will look from the start, and no guess work about where the location or size of room or closet.

Many of those old structures still adorn the roadside and the hillside in our New England states, while many have been re-built and re-modeled to make them more attractive to the eye and more convenient for use, as better methods and better homes are suggested by a more advanced civilization. And while it is true there has been marked improvement in so many ways, with better modes of construction, and all kinds of labor in the construction, so much quickened and lessened by the appliances of machinery, yet, in fact, I know of quite a number of ladies who have made most admirable plans for convenient and economical house room, and many a happy suggestion the builder can get from the wife of his patron, if he is not too stubborn to accept it. It is no very great task to mark out on paper the ground plan of your proposed house, to a scale showing the relation of rooms to each and their purpose, then consult the best practical architect and builder of your acquaintance, and if he cannot do the work for you get his advice and opinion, with a few or complete detailed drawings; but in all cases have a complete specification of work and materials, whether you let the job by contract or hire your carpenters by the day, for it will save much in time and often or always avoid misunderstanding. In this, as in all other enterprises, it will not pay to hire incompetent workmen, even if they agree to work at low wages, for often the waste of material, or the lack of ability to comprehend details, more than offsets the difference in the price of wages. And however well your plans may be made, and specifications drawn, an incompetent workman may spoil the job. We often hear the remark from those who have visited at the homes or houses of city relations or friends, "I wish our house was as handy

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and convenient as Mr. So and So's." Now there is no reason or excuse why the country home should not be more so. The wealthy landlord or the owner of a private residence in the city builds so as to get the best returns in money or comfort on the investment.

Our own home certainly should be constructed with the greatest care as to comfort and convenience. Very much depends upon the location of farm buildings as related to the use and purposes of the farm, and while I urge always a pleasant location, it is not always advisable to place it upon the highest land, but *it is always best* to locate with good drainage from the house in every direction if possible. And be very sure that the well is so situated that no surface drainage can come in contact with the drinking water.

Wind engines or wind mills are now so cheap that most every farmer has one. A very simple arrangement is used to convey the water into a small tank at the door or in the house, and from there to the barn or elsewhere. And I have seen this so constructed that three tanks were connected with one line of pipe. The overflow from the house tank supplied one in the barn, and from this the large or outside tank was supplied. With this arrangement it is very rare that the supply of water is exhausted or that the women folks will have to go to the well for it. No one will think now of building without ample provision for soft water, and the cistern should be constructed if possible, with an overflow as well as as a filter. This filter to be good enough for all practical purposes, need not cost over two or three dollars, made of good, sound brick at one side of the bottom of the cistern, and in capacity of some twenty or thirty gallons. The pipes or leaders from the eve-troughs should extend to the bottom of the cistern, instead of taking the rain water only to the surface; by so doing the water in the cistern is kept pure by being aireated, and wasting at the overflow rather than by a cut-off. The expense too of having a pump at the bath-room as well as the wash-room.

There is, however, a better and by no means very expensive way of having a tank or a bath-room, wash-room or kitchen which need not hold more than ten or twenty bar-

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rels of water. This is connected to the main cistern by pipe and cut-off so that no fear can be had of overflow. The conveniences of this arrangement is so obvious that I need not enlarge upon its mode of construction. The main cistern should, if possible, have an overflow pipe below the surface of the ground and connecting with the drain pipe from the house, but always tapped so that no foul air shall come in contact with the water in your cistern. All of these things are only a trifle of expense when compared to the convenience and saving of time and labor to those who do the work, whether of your own family or servants. Then much depends upon the location of your house with reference to your other buildings. I would not have it too far away from the barn or out-buildings, nor would I locate it on the north of them nor across the highway; for I can think of no reason to compensate for this "yankee" style that will offset the inconvenience of having to cross and recross a dusty and muddy street hundreds of times in the course of the year, saying nothing of opening and shutting extra gates and doors.

In the arrangement of rooms, make those the most used the most pleasant; and if you have a parlor for show and to keep the nice things in, let it be off to one side out of the way. If the kitchen is intended simply for a kitchen, it need not be so very large, and you will not in that case need a pantry; but have shelves, drawers, work-table and dumb waiter on one side and a portion of it communicate or accessible to the dining-room by double-faced drawers and doors, for this will save very much of extra labor. I would have two or more of the rooms communicate by folding or sliding doors, and the chimney so arranged that it should be centrally located to economize both in fuel, and labor of tending stoves; and if you should at any time wish to put a furnace in the basement it will be all the better by this arrangement; and for this and other reasons it is best to start your chimneys from the cellar foundation. I would advise to have all stove-pipes enter the chimney below the ceiling and place registers in the floors for the purpose of warming the chambers in winter, and to change the atmos-

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phere of the rooms in summer even. There is, however, a patent drum or heater lately being used which is very safe and economical in saving heat for chambers when placed in the upper room or hall-way, and by opening the doors from this, two or three rooms are comfortably warmed.

I have very briefly mentioned some of the styles of architecture. But what would be proper for a temple or public building would for the style of *our* house be very improper. Yet for all of this we have seen the attempt to make a dwelling house look well with heavy Doric columns supporting a gable end so as to form a lofty porch for the front entrance.

The Gothic style looks well enough for a church edifice, and is more sensible for a house than those more ancient.

A style more modern from the French called Mansard, from its author or originator is more in keeping with our taste of harmony and more substantial in effect.

But more lately there has sprung up what we choose to call the Queen Anne style. So if anything looks odd and all out of shape it is safe to call it Queen Anne. I had written something of my ideas regarding this craze, which is soon to pass away, when I came across this bit of humor from Bill Nye. He calls it crazy quilt architecture and as many a truth is spoken in jest, I will give his description instead of my own.

CRAZY QUILT ARCHITECTURE.

It may be premature, perhaps, but I desire to suggest to any one who may be contemplating the erection of a summer residence for me, as a slight testimonial of his high regard for my sterling worth, that I hope he will not construct it on the modern plan of mental hallucination and morbid delirium tremens peculiar to recent architecture.

Of course a man ought not to look a gift house in the gable end, but if my friends don't know me any better than to build me a summer house, and throw in odd windows that nobody else wanted, and then daub it up with colors they have bought at auction, and applied to the house after dark with a shotgun, I think it is time that we had a better understanding.

Such a structure does not come within either of the three classes of Renaissance. It is neither Florentine, Roman nor Venetian. Any man can originate a style of architecture if he will drink the right kind of whisky long enough, and then describe his feelings to an amanuensis. Imagine the sensation that one of these modern, sawed-off cottages would create a

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hundred years from now, if it should survive. But that is impossible. The only cheering feature of the whole matter is, that these creatures of a disordered imagination must soon pass away, and the bright sunlight of hard horse-sense shine in through the shattered dormers and gables of gnawed off architecture of the average summer resort. A friend of mine, a few days ago, showed me his new house with much pride. He asked me what I thought of it. I told him I liked it first rate. Then I went home and wept all night. It was my first falsehood.

The house, taken as a whole, looked to me like a skating rink that had started out to make money, and then suddenly changed its mind, and resolved to become a tannery. Then ten feet higher it had lost all self-respect and blossomed into a full-blown "drunk and disorderly," surmounted by the smoke stack of a foundry, and with the bright future of thirty days ahead with the chain gang. That's the way it looked to me.

The roofs were made of little odds and ends of misfit rafters and distorted shingles that somebody had purchased at sheriff's sale, and the rooms and stairs were giddy in the extreme. I went in and rambled around the cross-eyed staircases and other nightmares till reason tottered on her throne. Then I came out and stood on the architectural wart called the side porch, to get fresh air. This porch was painted a dull red, and it had wooden rosettes, at the corners that looked like a brand new carbuncle on the nose of a social wreck. Farther up on the demoralized lumber pile I saw now and then places where the workman's mind had wandered, and he had nailed on his clapboards wrong side up, and then painted them with the Paris green that he had intended to use on something else. It was an odd looking structure indeed. If my friend got all the materials for nothing from people who had fragments of paint and lumber left over after they had failed, and then if the workmen constructed it nights for mental relaxation and intellectual repose, without charge, of course the scheme was a financial success, but architecturally, the house is a gross violation of the statutes in such cases made and provided, and against the peace and dignity of the state.

There is a look of extreme poverty about the structure which a man might struggle for years to acquire and then fail. No one could look upon it without feeling a heartache for the man who built that house, and probably struggled on year after year, building a little of it at a time as he could steal the lumber, getting a new workman each year, building a knob here and a protuberance there, putting in a three cornered window at one point and a yellow tile or a wad of broken glass or other debris at another, patiently filling in around the ranch with any old rubbish that other people had got through with, and painting it as he went along, taking what was left in the bottom of the pot after his neighbors had painted their bob sleds or their tree boxes — little favors thankfully received — and then surmounting the whole pile with a potpourri of roof, a grand fare-

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well incubus of bumps and hollows for the rain to wander through and seek out the different cells where the lunatics live who inhabit it.

I did tell my friend of one thing that I thought would improve the looks of his house. He asked me eagerly what it could be. I said it would take a man of great courage to do it for him. He said he did not care for that. He would do it himself. If it only needed one thing, he would never rest until he had it, whatever that might be. Then I told him that if he had a friend — one that he could trust — who would steal in there some night when the family were away, and scratch a match on the leg of his breeches or on the breeches of any other gentleman that was present, and hold it where it would ignite the alleged house, and then remain to see that the fire department did not meddle with it, he would confer a great favor on one who would cheerfully retaliate in kind at call.

But we have what may be considered a modification of the Queen Anne, as being more plain, and therefore better adapted to the taste and requirements of the American people. All things considered, a house square or nearly square, with a high roof may be the cheapest to enclose a given space; but if cheap is what we are after let us build our house like the barn. We take pride in the beautiful, so we may make our house with a pleasing exterior in gables, cornice and windows, and to do so we will avoid long wings and bring it up compact, so that each part will sustain the other. This will give it the appearance of firmness and solidity, besides making all of our rooms easy of access.

In this county we have such a variety of building material that everyone can gratify their own taste. But for country buildings wood has, and will for some time be the principal material used, and since the adoption of a better style of painting more in harmony with natural objects than the blank white, what would otherwise appear cold and tame, looks neat and cozy. In planning your house, be sure that all the foundation walls, if in clayey soil are put below frost, whatever the superstructure may be.

We will suppose you have decided to build of wood, then of course you will have what we call a balloon frame, for this is a western invention and cheaper and better than the old method of mortice and tenon. And for this class of buildings it is not necessary to use sills even, but instead two thicknesses of 2x8 stuff, letting joists and studs rest on

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these, spiking the two together. It is not necessary either to use long studding for high buildings, but preferably we will use such lengths as we want the highth of each story. If for instance, you wish your first story 10 feet, cut them four inches less, then use two thicknesses of 2x4, as you would for plater, and for the second story proceed as for the first, cutting the studs of the right length to receive the plater. You thus have a better and cheaper frame than one of continuous lengths of studdings, and all communication of vermin or a circulation of air is cut off.

To make our house warm in winter and cool in summer; we make tight walls by using sheating boards well nailed and well covered with building paper, well lapped and wrapped around corners and under all window frames and casings and under the shingles. Lay down your first floor before plastering and then put paper on to this before laying the floor proper. In addition to this we sometimes put paper onto or between the studs before lathing and plastering. In all cases let the plastering go tight down to the floor. I am glad to say that the style of wide casings and heavy mouldings for inside finish has been superseeded by much narrower and planer casings. But to give a variety we use the natural woods trimmed with other kinds or varieties. And almost any variety of wood finished in this way in its natural color looks well. To be sure we want no bunglers at this kind of work, for if a clean glove hides a dirty hand, so paint and putty covers many defects of a slovenly workman. I have mentioned some of the conveniences and improved methods of house building; but in a paper of this kind it is not proper to go into details for it would take too much of the time of this convention. If we only know how it costs no more to do a thing properly, than to do it poorly or improperly. It costs no more to have our house planned so as to be convenient, than it does to have it ugly and inconvenient. If my kitchen is arranged so that my wife and daughters can do their work in less time and easier, then they will have more time to devote to something else. A dumb waiter in kitchen or dining room will save many steps down and up from the cellar. The cistern pump within

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reach of the cook stove or a tank over-head is better than to draw the water with pail and rope outside. A nice revolving flour chest under the work table is neater and much more convenient than to keep it in a sack or barrel in some back room. Wood nicely prepared and kept dry is better economy than to go ten rods to the wood-pile and dig it out of the snow.

The intelligent *paterfamilies* and the skilled mechanic by a little forethought, can save much in time and expense by well matured plans; taking into consideration all of the details. By thus doing our *house* or *home*, though costing less than two thousand dollars perhaps, may be of more value in home comfort than a huge pile of brick, wood and mortar costing twice the amount. For to my mind a ten thousand dollar house is to much house for home comfort to the farmer. Not to this class are the suggestions offered, but to those of more moderate means.

Not long since I was talking to a very intelligent man upon this subject, who had built a city and a country house, the country house is now his home: "My first house, said he, cost me nearly six thousand dollars, the one I now live in cost me twenty-five hundred dollars, and it is every way complete in all of its details, and more desirable for my family than the first one, though not costing me half as much."

Those who are able to build a five or ten thousand dollar house are not those who are content with rural life or rural home, and to those who are able to build palaces, the suggestions offered in this paper are of but little use.

There may be some who are ambitious for more land, and farm is added to farm, while the toil and drudgery goes on year after year; comforts and conveniences are denied to secure the money for more farm and more taxes. Or the ambition may be for a costly house; the earnings and savings are laid by for this purpose, and all are looking forward to the time when their hopes shall be realized. But the years come and go. Some of the children have left the paternal home which was inconvenient and cheerless. By and by perhaps the costly house is built, but who is there now to

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enjoy it. Fifteen hundred or two thousand dollars invested in a neat cosey house ten years earlier, how much better for father and mother, and the boys and girls would have had a home of pleasure and contentment which would have made them better men and better women. "My father is the best man I know of," said a young lady in my presence not long since, "and my mother is the best woman in the world, so good and kind, and our home is always so pleasant with father, mother and brothers to love me." It must be a strong and loving heart and a manly man that can woo and win such a daughter from this home. We know of such homes as this, and the whole after life is sweetened by its remembrance.

DISCUSSION.

This paper was discussed by Mr. Broughton, who opposed the idea which he understood the paper to convey, that a farmer should build a house regardless of the consequences of running in debt.

Mr. Olds — I would like to speak a word in favor of the heating drum, spoken of in the paper as a means of economizingfuel and of ventilating a room. It was invented in my town. I have one attached to my heating stove and it has proven to be a very excellent thing. It draws in a current of air from out doors and carries that current into the room already heated, and drives the foul air into the flues of the chimney thereby ventilating the room.

Mr. Hoxie — I want to draw attention to one thing in this paper, and that is the idea of farmers out west to get more land than they know what to do with. I think a farmer should get a home instead of so much land.

Mr. Plumb — I want to offer one suggestion. I have visited Mr. Hoxie's recently built home, and I would say to all who contemplate building, that you would do well to get the plan of his kitchen. I have visited many homes, and costly houses, but when I saw the arrangements for cooking in Mr. Hoxie's home, I thought then that that was worth all the rest of his very complete house together. So I drop this

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suggestion that if he has the plan of his kitchen with him, I hope you will all see it.

Mr. Broughton here offered a resolution in commendation of the work being done in the state by farmers' institutes.

Mr. Phillips — I move the adoption of the resolution. Mr. Morrison wished me to say a word in this connection. He does not claim the honor of making a success of these institutes. They are, he says, the result of seed sown years ago by Prof. Daniells and others, together with the winter meetings of the State Agricultural and Horticultural societies, from which now these institutes are reaping such bountiful harvests. The resolution was unanimously adopted.

Mrs. Ida E. Tilson read a paper on "Home Adornment," and was followed by Mrs. Campbell, who read a paper on the subject of "How to Educate Our Girls."

HOME ADORNMENT.

By MRS. IDA E. TILSON.

Literature, sacred and secular, poetical and prose, is full of references to the garden. In history the pleasure grounds of Nebuchadneezar, Haroun al Raschid and Louis XIV. stand side by side with their warlike deeds. Scarcely a modern newspaper can be taken up which does not contain articles on artistic architecture, decoration of rooms, arrangement of furniture and drapery, or beauty in horticulture. Two or three distinct professions have grown out of this general public interest, and there has been a great change for the better in our homes within a few years, but some chance for improvement still remains, more particularly, perhaps in localities remote from cities and villages. Then, too, we all grow and live and learn by repetition. Over and over again the sun rises and the rain falls. Over and over again we tread the round ef daily duties. It is "line upon line and precept upon precept" in education. So, although much has been written about home adornment, perhaps further attention can profitably be given this subject.

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Man's desire for the beautiful seems equally natural with his desire for aliment. When cattle have food and shelter they are satisfied. Man chiefly differs from beasts in that when fed and sheltered proportionately as well as they, still is not content, but shows wants and sentiments beyond and above his physical nature. He seems to be happy only when his life comprises something of grace and loveliness. His taste, however, has had various styles of expression in different ages. Not till the sixteenth century did the art proper of landscape gardening arise. Hardly more than a hundred years ago the poetical Shenstone first applied its principles to smaller grounds, and began diversifying his prospects, entangling his walks and winding his brooklets with such judgment and fancy that, as Dr. Johnson affirms, his little domain became the envy of great men, and the admiration of skillful ones, a place visited by travelers and copied by designers. Now, horticultural knowledge is so widespread, every place, consciously or unconciously, shows its influence. But our grandmothers' yards, of "ye olden time," with their high fences, prim borders and old-fashioned plants, are, by no means to be depreciated. They revealed that same universal love for beauty, and were the seed of one more perfect bloom. What past years have accomplished, is also prophetical of a grander future, when science and perseverance shall develop yet unknown resources.

In many ways, the value and appearance of homes can be enhanced. Will not all concede first place to improvements of a permanent character? Provided a house is yet to be erected, there remains the privilege of carefully selecting its site, which, if in the country, can be somewhat removed from the street and on an elevation. Close inspection is what finds defects, and distance does, indeed, often lend enchantment. An elevated position usually increases a building's apparent height. Grading has improved the natural features of a location, often.

One argument for extending grounds, is that land generally rises in value, while buildings gradually show age. The largest house is dwarfed by a small yard, and the

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smallest cottage, surrounded by ample space, seems sufficient. While both administer enjoyment, well-arranged grounds give a different pleasure from that of artistic rooms. Where a well-proportioned combination of them exists, there is the advantage of variety in being able to pass from one to the other. Does not the famed beauty of Minneapolis, La Crosse, Madison, and other comparatively young, western cities, lie much in those spacious grounds which dignify many of their best residences?

As a lady once remarked, talking with me on this subject, "Don't forget the grand, old trees." Very touching, too, is that ancient compact which Abraham made, when purchasing a burial place for his dead, "And all the trees that were in the field, that were in the borders round about, were made sure unto Abraham for a possession." There is a continual change of foliage and growth, and yet a permanence of main features, rarely combined in objects. Beauty, priceless itself, takes on, if possible, added value when seen to rest upon utility. The healthfulness of trees, their prevention of soils from washing away, conservation of water supplies, and worth as wind-brakes, together with their grace and grateful shade, give them pre-eminence among decorations. I once read of a woman who, on removing from her little old home, embowered in shrubbery, to a far more elegant, new residence, surrounded with debris, its outlying sand, unvaried by a single green thing, throughout the long, hot summer following, became the prey of homesickness and fever. Was it not an abrupt transition, preventible, to some extent, by setting out trees in advance?

Where we shall plant them is another question for decision. Rows on streets are common enough everywhere, and generally admissible, except along naturally wet roads. Many an old southern home, conveniently placed in the midst of its wide plantation, is approached through a magnificent avenue of live oaks. A favorite English and Canadian arrangement, uses trees as a background to the dwelling and for groups on either side of it, leaving an open front, very effective in case a house has such size and dignity that it can bear standing out unrelieved. Glimpses here

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and there, through a grove, well suit a cottage's modest pretensions. A very prevalent American style, crowds every tree possible into a yard, till roofs are moss covered, rooms dark and mouldy, inhabitants rheumatic, and sometimes, a high wind ends the scene with a general crash. I, myself, know a rheumatic person who was much benefited by a judicious trimming and topping of the dense mass which overshadowed her home, and I have heard of a consumptive similarly cured. Surely, disease must not be invited by our embellishments! Let there be free circulation of air, and give the sunshine a chance to strike the house and reach its interior. We are so influenced by surroundings, doubtless sunny rooms do their part toward sunny lives. Is not an overcrowded place, however large, inconvenient? While that not too full, even if small, gives some impression of space and freedom. A little study concerning trees, and a few lessons from reliable nurserymen, will correct mistakes, Nobody, just to look at a diminutive tree of any standard kind, would ever picture its future proportions, unless acquainted with its nature. Seldom, can trees be thinned out satisfactorily. Those remaining are apt to be one-sided and slender. Original plans are destroyed, and their remains hamper one in new designs.

For temperate zones, the American white elm stands first. perhaps, in public favor. Its comparative immunity from parasites, hardiness to cold, tough branches, not easily broken by wind, and plumy head, well fit it for every purpose. Red and white maples, though lacking part of these excellent characteristics, are yet, by their rapid growth, adapted to temporary uses. Nurserymen are urging the claims of catalpa, hackberry and others. Certainly, evergreens should be encouraged, because they seem to lessen winter's length and severity. They are also the most effective background for birch, ash, willow, and other slender, graceful growths.

Little by little, various decorations grow up around the lover of beauty. Shrubs and vines, neat arbors and palings will be substituted for weeds, briars, and shaky fences. When hedges are employed, one semi-circle inside another, with

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their bases on the street, and a drive-way between them, is a graceful design. A curved line separate kitchen-gardens from ornamental grounds, or a circular yard be outlined by a border. Beautiful models are all about us, from which ideas may be gathered or variations made. Too often, high, close fences obscure the view both ways, and apparently reduce the size of all within and beyond them. They have a very exclusive air, too. Those familiar with southern scenes will remember as I do, the tall fences often met there, gates in which are sometimes veritable doors, provided with locks and bells. No fences, low ones, or wires, nearly invisible, now happily so common, are commended by aesthetic authorities. Illustrated journals frequently give cuts of easily made rustic seats. Those fastened to trees for backs and supports, are quickly enough done, and quite inexpensive settees can be purchased. Statuary should be unobtrusive and suitable. If a live deer is not at home in confined areas and among flower beds, neither is a stone imitation. Rock-work is fitted for retired spots, shaded by trees, suggesting the grottoes from whence it came. If conspicuously placed, it will be most attractive when arranged; as it often is, to imitate old ruins, or with any other definite design.

There is no more fascinating branch of flower gardening than bringing in to some shady nook or unused corner the spirit of the forest. I remember one rockery built around a deep dish for water in which grew pitcher-plants and other aquatic kinds, while all tall brakes nodded. Even a stump covered with vines and sweet white violets nestling about it, whisper of their woodland home. Wild roses, blue violets and dicentras, are beauties easily domesticated. A miscellaneous bed is interesting, and a sprinkling of forest soil every autumn, will make such a one thrive for years. A strong tub, sunk in the ground, planted round with flower-de-luce to hide its rim, and filled with water, having a few inches of muck in the bottom, is completed when a water-lily is anchored there by a small stone fastened to its root. Although these departures from stereotyped forms take time, they are very pleasing.

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No feature of home adornment has been so often and so thoroughly discussed, as the flower garden proper, which can, therefore, be passed with but a brief reference to its glorious possibilities. For brilliant hues, and for a constant succession of blossoms, no annuals can excel the petunia and the phlox. They are healthy, robust plants, that are successful with amateurs. Asters are desirable, because they come into bloom after the greater share of garden flowers have passed their prime. Tulips are a riot of colors, and no counter spread with velvets, ever showed so soft and lustrous as a bed of pansies. While prairie roses and multifloras have all failed me, old-fashioned Freneh Boursalts yields neither to winter's cold nor summer's scythe. I once tried a ribbon of differently colored foliage plants and grasses, and found it not so difficult to manage as I had supposed.

Aesthetic critics, however, do not like a lawn too much divided up by beds and clumps of flowers, which also detract from its apparent dimensions. Certainly a solid bank of color at one side, forms a very striking contrast to the mass of green, thus left unbroken elsewhere. Though beauty's mission includes guests and even passers-by, its first and highest work begins at home. Is it not well to place plants under windows where tired housekeepers will be sure to see them? Cannot fragrant flowers dispel the gloom and malaria which sometimes hang round kitchen doors?

While rules for the strictly artistic, cannot always be followed out in practice but must be modified by circumstances and individual comfort and taste, both architects and illustrated journals have plans for houses which, at little or no more extra expense, are "ornamental as well as useful." A great variety of soft neutral tints are now obtainable in paints. Entering woman's special domain, too, we are reminded that art is uplifting even the commonest parts of house furnishing. Never before were there such cheap glories in paper, furniture and drapery. Taste and judgment can play a part once filled by money only.

Two old rules deserve frequent repetition. First, "have nothing in your house which is not either beautiful or useful." Second, "have no more in quantity than you can con-

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scientiously and properly care for." Many rooms are so full of bric-a-brac and fancy work, there is a fever of worry every time a child appears or a guest comes, lest injury be done the products into which so much of soul and eyesight have gone. These curiosity shops, while very interesting, are unexcelled inviters of moth and mildew. Much time and strength are needed to dust and clean them. I speak from personal experience, but my trunk of reserved fancy work has been well lowered by gifts to friends, whom I am determined shall share my care. Father's tool house, dubbed "Memorial Hall," has been well decorated with less valuable articles, better than not spared from the house, and thus put where "moth and rust" may freely corrupt, "and thieves break through and steal." What the tool house wouldn't hold, a wide, deep river, behind the farm, has borne into the ample Mississippi. Dear Martha, "cumbered with much serving," "go thou, and do likewise."

Nor, on the other hand, does any one want blank, staring walls and mantels. But, are not books and pictures most valuable, and comparatively easy, besides, to care for and repair? Since one of Ruskin's principal directions for artists is to follow nature as it lies around them, why not oftener use originals instead of imitations? Not destitute is he who can sing:

"No palace have I on the hill
No pictures to hang in my halls,
But never a painter could match with his skill
The roses abloom on my walls.

"When down my green valley, in purple and gold,
The morning comes dewy and bright,
I look from my window to see them unfold
Their buds at the kiss of the light."

Nature's abundant stores have always something that will please a seeking eye, and an artistic sense knows how to bring out their lovliness by deft arrangement. When graceful grasses, harvest lilies, and even golden rod and blue gentian are all gone, autumn leaves come, gorgeous in scarlet and gold; after them, delicate mosses, plumes of pine and juniper, and bracket-like forms of litchens still remain.

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These, which are all inexpensive ornaments, easily renewed, can, therefore, be thrown aside when their first freshness is gone. Some unusual and interesting specimens can generally be found in new roads, where fresh soils are turned up, or along the railroads, those public carriers of seeds, too.

House plants have an important place. But are not a few choice specimens better than numberless, indifferent ones? White flowers, often so indispensable, are usually called more difficult to raise than the colored ones. Having that in mind, I once asked a florist for a hardy list. Included in it, besides distinctively white flowers, were white varieties of eupatorium, eucharis, abutilon, bouvardia, oxalis and lantana.

There is one part of a house which deserves more than generalities — the kitchen. How many women spend the best of their lives in dark, uncomfortable, cheerless cook-rooms. A friend has given us an interesting experience. In her youth, a neighbor tore away a small kitchen and replaced it with a large, airy, sunny one, at which all the young girls, thinking more of parlors and furbelows, laughed in their superior wisdom, among them my narrator, who now in her own contracted, crowded kitchen, finds "the laugh on the other side" and at her own ignorance. While suitable apartments for guests are desirable, if a house can have but one pleasant room, should it not be this home laboratory? I know a wise woman who found a rocking chair, a gay rug, and a little stand for books, etc., not amiss while watching her baking. Back piazzas are delightful for summer use and work. Let us, by bright and cheerful surroundings of every kind, make work more a pleasure and less a task. Suppose domestics to be employed, are not the same happy influences owed those who bear our burdens for us?

Though every arrangement cannot be perfect at once, year by year improvements should be made that will add both real value and inviting aspect to a place. While these things are not the home, they are framework which makes it complete.

There is a moral element in such work. We are building

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not only for the present, but also for the future, not for one person alone, but for many young people who go out from a pleasant home, always look back upon it as the dearest, most delightful spot on earth, and their constant desire is to re-visit it, or to secure one like it for themselves.

"From its white walls the very tendrils wreathing,
Seem with soft links to draw the wanderer back,
The spirit of its love is breathing
In every wind that blows across his track."

Our consular report for 1884, has several interesting articles on the condition of workingmen abroad. Their final prospect, unless one dies in harness, is generally the almshouse. Here, even the poorest man, if industrious and saving, may "sit beneath his own vine and fig tree." Is it not America's highest virtue, that she is, emphatically, a land of homes?

HOW TO EDUCATE OUR GIRLS.

By MRS. VIE H. CAMPBELL.

My subject, which has for consideration that which is to us of so grave importance as the education of one-half our race, embraces too wide a range of thought and too broad a field of action to be treated of in a comprehensive manner, and yet be sufficiently condensed to only occupy the brief space of time allotted for the presentation of these papers. Time will therefore only permit me to give you a few disconnected thoughts which come under the broad subject of "The Education of Our Girls."

Every child has a right to be well born. The fact that there are thousands of children who have been defrauded of the right to be physically well-born, pale faces, puny, distorted and imperfect forms will everywhere attest. In sadness must we say that of those who are defrauded of the right to be mentally born, the calendar is too full.

The education of the child commences at the earliest period of its individualized existence, and, by the divine order of things, must of necessity begin with the mother.

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How important and how sacred the office of mother! And few, we fear, are capable of discharging its functions justly to the young lives involved. The ignorance among those who assume the holy duty of parenthood is appalling and is the one unpardonable sin against the Most High. While months, yea, oftimes years of preparation is deemed requisite to become thoroughly fitted to enter a profession whereby a livelihood may be earned — a competence gained — absolutely no preparation or no thought is given to this more essential than all the professions, the improvement of the race, for there is no science so grand as the science of human development.

While our agricultural reports fill huge volumes with the experience of those who have given a life's work to the improvement of our horses, our cattle, sheep and swine, not one thought is given to the improvement of the human family. We who give so much thought to the careful selection of our domestic animals and point with just pride to their long line of noble pedigree, unthinkingly allow our sons and daughters to assume the duties of parenthood unprepared and uneducated. If we, as parents, fail in this important duty to our children, does not the future welfare and advancement of the race demand that a method shall be instituted wherein this lack may be supplied?

Until this long felt want is met we shall make little progress toward the perfection of humanity. Will not our schools for advanced pupils be on the high road to perfection when they adopt a curriculum of study for the special purpose of fitting pupils to become teachers in this important and neglected branch? Under our present method of teaching allusions to the perfection of the human race are studiously avoided, and only a smattering of physical and hygenical laws are acquired when the pupil is considered to have learned all that is essential regarding the body — the building up of the temple for the indwelling of the spirit. It is only character building, shaping the destiny of immortal beings for which we demand no preparation.

Human society cannot escape decay save by the process of constant renewal. The perfection of man is the goal

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attained, and nature points to man with unerring certainty as the direct and most powerful agent for the accomplishment of this great end; and by enlightenment and exaltation will civilization be enabled to march forward to its grand and high destiny. We need the doctrine of heredity taught and promulgated everywhere, for it is upon this doctrine the salvation of the race depends. Those who occupy the pulpits of the land, as teachers of mankind, have a wonderful opportunity for teaching this plan of redemption. Let them not neglect their God-given opportunity.

Noble sons are born only of noble mothers. Can we expect men and women of noble purpose whose mothers are in the thralldom of ignorance? Can we expect loyal and patriotic sons and daughters born of mothers in servility? Our everyday experience answers, no! God speed the day when men shall take truth for authority, when the word of God will be found in the laws of nature and the heart of man. We ask this for suffering humanity's sake.

Since the physical is the basis—the foundation upon which we must build—it is of the greatest importance that our system of education be of that character which will tend to a complete and perfect development of the whole physical structure that we may have the perfect and harmonious action of a strong healthy mind through the medium of a strong healthy body, for we can in no wise expect grand manifestations through distorted mediums of communication, nor can we hope for an enduring structure built upon an insecure foundation.

This portion of the education of our girls is so faulty, or we might almost say there has been such an entire lack of a system of physical education, that we are led to wonder how there are any girls who survived. We have the girl at birth seemingly in every way equal to the boy baby; though his muscles might he a trifle larger, hers are finer; though his brain may be larger and weigh a little more, hers possesses greater complexity of organism. Each is equally endowed with vitality, shows equal activity, with tenacity of life greatly in her favor. And for a short distance of their existence they are treated equally. But soon a change takes

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place! A dwarfing, cramping process begins with the girl; her hands are crowded into tight gloves, her feet are cramped by shoes too small. And worse than this, as though these were not sufficient torture, her clothes are made in a manner to compress, gradually, the chest, to drag down the hips and elongate the waist. This is done to give her "style" in form.

If mothers could study a comparison of this so-called stylish form and some of the finely sculptured models of natural female forms, they would be forever cured of this mania, for it is only a form of insanity that prompts a mother to so cramp and change a form which has received the approval of the Divine Architect. How can we expect our girls to unfold the best of which they are capable if they must be subjected to this process?

The tendency among the various nations to cramp in some way woman's form, originated, no doubt, from the old idea of woman's inferiority and consequent subserviency. Those whom we enslave we fetter. Mothers who have not outgrown their childish fondness for dolls, try to make dolls of their girls and dress them in costly apparel; then as a natural consequence they must be shut up in the house lest they ruin their fine clothing, while "romp" and "tom boy" are the frightful bugbears constantly held before their childish eyes. The world has grand possibilities for the girl who has an inborn consciousness of her physical requirements to a degree that she will take outdoor exercise at the risk of torn and soiled clothes; yes, and even being called a romp. Show me a "natural born romp" and I will show you a girl who, with judicious training, will attain to noble womanhood, who will win her way to success and be eminently fitted to fulfil her duty to the world as a race-builder.

The essential points of education regarding the subject of dress are, that it shall be comfortable; that while it should conform to to the lines and curves of the body, it should not compress; that it should be becoming to the individual, adapted to the season, suitable to the occupation and habits of the wearer, and should be as inconspicuous as possible.

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The more cultured women become the more careful are they to incorporate hygenic principles in dress.

Deep breathing is most essential to deep thinking; therefore, if we would be capable of broad, deep thought, we must be able breathe deeply. The brain poorly supplied with blood cannot fulfil its proper function.

Individual effort can accomplish little toward a dress reform save to call upon itself the ridicule of the less wise, but organized effort can accomplish everything. However faulty or whatever absurdities the æsthetic school of dress may contain, we must give it the credit justly its due for having encouraged in every way freedom and grace of motion.

The physical education of our girls should not differ from that of our boys. Does he need to spend a certain portion of each day in the open air? It is equally absolute for her. Walking is one of the best of out-door exercises, yet American women who are trained to walk are so few that I fear a half dozen could not be found in my audience. It were better for us if horses and carriages were a luxury not so easily obtained. President Elliot tells the freshmen of Harvard University that they "ought to be able to walk ten miles a day on an average as a matter of course." If our girls were trained to walk half that number of miles daily we should see frail forms develop into robust ones.

The importance of a physical training for our girls is constantly becoming more apparent. An extract from a book published by Dr. Jno. Gregory, in 1774, shows us the great progress which has been made in the physical requirements for girls in the past century. He gives us this advice to his daughters:

"Though good health be one of the greatest blessings of life, never make a boast of it, but enjoy it in silence. We so naturally associate the idea of female delicacy and softness with a corresponding delicacy of constitution, that when a woman speaks of her great strength, her ability to bear excessive fatigue, we recoil at the description in a way she is little aware of."

Now, as the light of a new century casts upon us the rays of its dawning, we would supplement this advice by saying

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to our girls: Rejoice in your strength and be as unwilling to acknowledge a physical weakness as a mental deficiency, because such weaknesses are not the Divine plan, but a disregard of it.

I cannot leave the subject of physical education — a subject which of itself would furnish thought for an extensive paper — without reference to the importance of an industrial education for our girls.

Scarcely half a century has elapsed since any sort of remunerative industry for women has been encouraged, except the lower class of manual labor, and yet the remuneration is not commensurate with that of men for the same kind of labor. This, together with the fact that woman was in danger of losing social caste if she performed manual labor, has had much to do with her social position to-day. We want not *less* of the doctrine of the dignity and honorableness of labor promulgated, but we want *more* of the dishonorableness of idleness and dependence proclaimed. When a girl who contributes nothing to the industries of life is considered an idler — a drone in the busy hive — and it is as much to *her* discredit that she has accumulated nothing from the exercise of her industrial faculties when she assumes the sacred responsibilities of matrimony, as it is now to her brother's, then we shall have gone a long way on the high road to reform. Margaret Fuller truthfully says: "No woman can give her hand with dignity, or her heart with loyalty, until she has learned to stand alone."

The injustice which parents, rich or poor, do their daughters in not educating them for some vocation by which they may be self-supporting, and lifted out of the condition of pecuniary dependence, is not to be computed. The mother love evinces no wisdom that shields the daughter from, rather than prepares her to meet, the rough winds of adversity. Girls should be early taught to never shrink from the discharge of a duty because it is irksome, but rather cultivate a strength to surmount all obstacles, for it is thus that the heights of a true and noble womanhood are attained.

The stimulus to excel should be instilled early in life. We should essay perfection, no matter how humble our occupa-

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tion. An honest and earnest desire to do the very best we can in everything our hands find to do, eventually meets a demand for employment in higher channels. The day is near when women will lack for no high incentive to the best results in every branch of intellectual endeavor and skilled workmanship.

The soul of every true girl will revolt against being dependent upon other than her own resources. I would not consider it important that every girl should be taught the complex duties which are, with our present individualistic system of living, considered as belonging to housekeeping, any more than I would compel every boy to learn house-building, but I would give her a thorough education in that branch of industry for which she shows a natural inclination and adaptation. Woman is naturally industrious. This is an inherent element of her woman's nature; it is a prominent characteristic of the whole feminine portion of creation, and only a false and injudicious system of training has made her otherwise. Teach girls that salvation depends upon individual exertion instead of Divine intercession. The need is imperative for industrial schools, where girls can acquire a practical knowledge of trades or professions whereby they may become self-supporting.

The world is full of demands for skilled labor and in justice to our girls they should be fitted to meet these demands. A just legislation is also needed that equal labor shall receive equal remuneration. The barriers which surround woman are slowly but surely crumbling to decay. And in proportion as the law of force is weakening in the several relations of life, and the law of love and reason is taking its place, just in that proportion will the equal claims of woman receive their just recognition. The statement that "the world needs women who do their own thinking," coming as it does from one who is devoting a busy life to the promotion of the welfare of woman, proves to us that too little attention is bestowed upon the mental education of our girls. This is the result of a false system of education — makes woman a dependant.

The mind is active, always eagerly reaching out for food

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for its nourishment and growth. Take away all responsibility and it will turn to frivolities and become weakened through inaction. Responsibilities bring added strength of character, and when woman uses the broom of thought she will soon sweep the cobwebs of error from her mind.

The position of woman should never be secondary. Her interests are identical with man's, Humanity needs both, and in every condition or progress both must necessarily be included. The government which holds her amenable, equally with man, should allow her the right of equal expression. The clock that strikes the hours for our century points with unerring hand to the time when woman must aid in the solution of the great moral and social problems which are of vital import to her, to home and all she holds dear. No thoughtful person can fail to see the great influence which women are constantly exercising upon the destinies of the world. They are the natural guardians of the home, preserving the sacred fire upon the domestic hearth whereat every virtue is kindled. "No greater good can come to the manhood of the world than is prophesied in the increasing community of thought and works between it and the world's womanhood." The growing individuality and independence of woman will require from man a higher standard of character and purer habits of life.

A liberal education — by this I mean a liberal amount of education — so broadens one's knowledge of and faith in humanity, so lifts one out of the narrow routine of trivial daily cares, so adds to one's resources and so enriches one in every way that no matter how isolated the possessor, she is never lonely, because she will enjoy the communion of her own thoughts and will also enjoy the society of the best people in the world through their writings. Ruskin says in his beautiful language: "Make yourselves nests of beautiful thoughts. None of us know, for none of us have been taught in early youth, what fairy palaces we may build of beautiful thought, proof against all adversity; bright fancies, satisfied memories, noble histories, faithful sayings, treasure-houses of precious and restful thoughts, which care cannot disturb

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nor pain make gloomy, nor poverty take away from us — houses built without hands for our souls to live in."

The power which education gives us is unmeasurable; it is the lever by which the world is moved; it gives a strength that no other power can confer. It lifts woman up from a state of weakness and dependence to strong, self-reliant womanhood. A grand work, appealing to the motherhood of the country, is the going into the highways and the by-ways of our cities for the purpose of educating the poor motherless girls, as well as those worse than motherless, whose lives know naught of good, to become reliable, honorable women. This is a work before which the importance of foreign missions dwindle into insignificance. When we reflect that these girls are to take their places in the great ranks of womanhood as race-builders, it becomes apparent that there is no surer way of lessening the number of criminals — of improving the future status of the nation — than to devise means for the education of these our unfortunate sisters.

With what force comes the appeal to us who have the light to give unto those who have it not. And the tides of the great mother-heart of our land that do not change but surge onward with increasing sympathy ever, will surely respond to the call. The voice of Miriam will still cheer the brave advance, and all along the line we hear the battle cry, "Speak unto the children of Israel that they go forward." For this work, that lieth so near at hand, we shall reap a golden reward in the freer life and enlarged opportunities of the race.

"Every sower must one day reap
Fruit from the seed he has sown.
How carefully, then, it becomes us to keep
A watchful eye on the seed, and seek
To sow what is good, that we may not weep
To receive our own."

Mrs. Campbell's paper was first discussed by Mrs. Dr. Severance, who was enthusiastic in its commendation. She opposed the idea that boys were naturally more strong

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physically or mentally than girls, Their superiority, if indeed they possessed any, was due not to nature, but to the vicious modes of dress among women. The cramping process in woman's dress prevents the drawing of a deep, natural breath, and from this has grown the foolish assertion that the lungs of men and women are differently constituted, that men breathe horizontally and women perpendicularly. Deep breathing and deep thinking are inseparably connected. The fact that in the last two years five-sevenths of the graduates of our colleges have been girls, spoke conclusively against the idea that girls were the intellectual inferiors of boys.

Secretary Babbitt thought that the ideas expounded many years ago by Saint Paul were preached by the old bachelors out of pure sympathy for men, and if women had been given a fair chance, men would have had to work much harder than they do to hold their own.

Mr. Wright had expected a good paper from Mrs. Campbell and he had not been disappointed. He had in mind two families which furnished striking examples of the two modes of education suggested by Mrs. Campbell's paper. Both were families of girls and both were brought up on the farm, but in one case the out-door advantages had been embraced and in the other case they had not. The girls of the first family were all graduates of the State University, and were strong both physically and mentally. With reference to the industrial education of girls Mr. Wright called on Mr. Miner.

Mr. Miner had been very much interested for the last five or six years in this subject of the education of girls, the more so since he had daughters of his own to educate. He had been disposed to criticise the present methods of education of our land. In most cases the important part of the training of girls was left out. He adopts as a principle that every person should be trained for the position they expect to fill in life. If a person is going to be a farmer, let his training be in that direction. General training is very well and every person should gain an idea of the world in which

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we live, but much more time should be given to specific training. While girls may do many things that boys may do, as a matter of fact our daughters were not made to do precisely the same things that boys do. The holiest position and office filled on earth is that of wife and mother. No man occupies so high and holy a position. But this position is not understood as it ought to be. Many persons think that their daughters learn the duties of this position without study or training; that they will come into it naturally. As a matter of fact training is necessary in this direction quite as much as in others, and to fit for the highest and holiest of positions, the very best possible training is demanded and that training ought to be furnished by the schools of our land, but it is not. While time should be given to the study of literature and mathematics, special time ought to be devoted in the education of girls to the line pointed out in the paper just read. An institution has already been started in our state with this purpose in view. Its plans are being laid, and by and by it will be heard from. Its plan is to offer a place where daughters may be trained for their life-work, for the noblest work in which any woman can engage.

Mrs. Severance objected to the idea that girls should be educated apart from boys. They should be educated together and in precisely the same way. It is not good for a man to be alone, and just in proportion as boys and girls are educated in different lines, just so far are they educated apart from one another. It is a false idea to educate all girls for the position of wife and mother. There are many and many girls that ought never to be mothers, just as there are many men who ought not to be fathers. It will take several generations to develop them for that position. Let the girls develop every facility and then let them choose their vocation, just like the boys do. In a conversation with a gentleman some time since, he made the remark that if women were educated in this way a man could not get a wife. It is a fact that girls are taught from childhood up: that a girl's mission is to get married. This is a great mistake, for then when they marry they will marry for wealth and from a desire to get a companion, and then they will

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work in the kitchen to support him. I think they should be allowed to develop every faculty and then leave them free to choose their own occupation. When they do become pecuniarily independent, when they have the same rights and privileges in society that men have, then they will be free from all encumbrances. We are propagating a race of slaves now. When women become free and independent, then a race of children will come into the world such as has never been dreamed of. Give the girls and boys the same chances everywhere for choosing their life work.

Mr. Hatch — Not long since I visited an old man and found him making boots and shoes. He is the father of upwards of ten children. "Where are the other boys?" I asked him. He said, "I don't like to have them do this work. I suppose they are down town telling lies about their neighbors." It occurred to me that a father who could give such a reputation to his boy, never deserved a child. The curse of that man is that now being an old man, he has not a single helper. When his work is done he has not a child to take his place. I know of another man who has raised a family of children that have now grown to manhood and womanhood. There is one of his sons that never learned self-denial The other day I saw him at Richland Center, the only man of all that multitude who was intoxicated. In the convention at Richland Center a lady from Viroqua delivered a paper. President Smith says that lady has arrived at conlusions concerning fertilizers, that has taken him a lifetime to come at. There is nothing that I admire more than the clear incisive judgment of a woman, and I always feel foolish when I do not defer to my wife's judgment. It is immaterial to us who work or who play, but it is material that we have sons and daughters who can take up our work where we leave it off. The best thought of all is that there are women who can take up this work. I want to ask what are we doing to put our wives and daughters in this position? Are our sons and daughters able to take up this work? Have we taught them self-denial and self-reliance? I hope we will all take this lesson home with us, and that it will make better men and women of us.

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Another Gentleman — I would like to give my ideas as to raising sons and daughters. My idea is to raise them to usefulness and self-reliance. At the same time I tried to provide so that they might never leave their home unless they desired. My object was, to secure a home of such nature and surroundings that they would not want to leave their home, and I believe I was successful. My boys are all farmers and I believe they never had a desire to leave the farm. I believe fathers are to blame because their boys want to leave the farm. My youngest son taught his last school a year ago. When he came home, he said "that he had come to the conclusion that it was dividing his forces to teach and farm also, and that he had better give up teaching and confine himself to farming." Of course that was very gratifying to me. None of my boys were ever forced to leave the farm and they never received an education to climb on the dry goods boxes at the stores. I want to say though, that they had one of the best mothers that children ever had and a great deal that I have mentioned is due to this fact. I want to say that my youngest son who is with me on the farm is not there as a hireling, but is there as a partner. This is my idea of raising sons.

After a few more remarks by Mr. Dwight the discussion on this paper was closed.

Prof. Burrill was called on to present his paper on "Winter Killing." In order to make it lighter for his hearers, Prof. Burrill spoke without the aid of his manuscript.

THE MECHANICAL INJURIES TO TREES BY COLD.

By T. J. BURRILL, Professor of Botany and Horticulture, University of Illinois.

The injuries to the trunks of trees resulting from too low temperature, may be of several very distinct, kinds with or without apparent disturbance of the structure. But in this paper account is only made of those in which the tissues are mechanically ruptured and visible wounds produced. Of the latter we have to deal with two sets of phenomena, culminating in two very distinct methods of injury.

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In one case the wood and bark, or perhaps the latter alone, splits in a longitudinal, radial direction, so as to gape open more or less while frozen, and closes again, or nearly closes, upon the return of warm weather. These cracks are quite common, and are known to occur in most of our native as well as introduced trees, under peculiar conditions and circumstances. It is by no means a question of hardiness in the usual meaning of this term. The tree may not suffer from anything save the actual wound, the tissues retaining, perhaps to the very extremity, their usual vitality until afterwards killed by exposure. The cracks are much more frequent on the southwest side, but sometimes occur towards any point of the compass.

The second form of injury is in the separation of the bark from the wood, or cracks in the latter, so as to form concentric layers corresponding to the annual rings of growth, usually much thicker than these in radial diameter. These annular cracks in the wood are very often called "wind shakes," but are certainly sometimes, and probably are usually, due instead, to frost.

This form or injury is far more destructive to trees than the first just described when it occurs, but fortunately does not appear to be nearly so common. I have observed the rupture of the cambium, thus severing the bark from the wood only in orchard apple trees, white willows and butternuts. Undoubtedly it does often occur in other species. The annular cracks of the wood are frequent in many kinds of forest trees, especially those of large size; but the life of the tree is by no means so seriously affected as by the sloughing of the bark.

Sometimes in the first form of injury when only the bark cracks, there is soon exposed, owing to the expansion of the trunk by growth, a naked surface of wood; but this need not lead any one to confound the two kinds of wounds now described. In our second form, the bark may or may not be longitudinally cracked — usually it is not; but the separation from the wood is more or less complete over the affected area. Very often there is for months no external evidence of injury, and the sickly appearance of the leaves,

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perhaps after midsummer, first attracts attention. The bark itself is not always killed, and there appears an irregular, granular growth of wood upon its inner surface; but separate from the wood of the previous year. Ultimately, however, the loosened bark usually dies, and when the wound extends entirely around the trunk, the tree dies also. This result has been painfully common, as is too well known in the apple orchards of the western and northwestern states during recent years.

Having thus endeavored to describe the injuries, I now attempt an explanation, based to a considerable extent upon studies bearing directly upon the problem; but admittedly inweaving more or less of theory and thus liable to be partially incorrect. In the first place attention is called to some well known phenomena.

Water freezes at the temperature marked by 32° on Fahrenheit's thermometer; that is, the exceedingly minute, ultra-microscopical, but solid and firm particles — "molecules" — composing liquid water, at this temperature arrange themselves in certain regular positions with respect to each other and cohere so as to be no longer freely movable upon each other. The molecules are not in themselves essentially changed in respect to composition or hardness. They have simply arranged themselves in regular and fixed order like bricks in a tower, and a crystal is the result. To attain this result more or less molecular movement is required, and anything whatever that tends to prevent this movement tends to prevent the water freezing at the temperature stated. Indeed only pure water freezes at the temperature marked upon our thermometers. If a little salt or sugar is added the temperature must sink below 32° Fahrenheit for crystallization to take place, and the lower the greater the proportion of salt or sugar. Saturated salt water may be cooled down to 4° Fahrenheit before ice is formed, and then it is the arranged molecules of water alone which form the crystal, these having at last been drawn from the attractive embrace of the foreign or salt molecules.

Now aside from the liquid water sometimes contained in the cell cavities, *the molecules of water help form the solid*

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texture of plants. This may not be so familiar to many as the facts just stated; but it is exceedingly important that we should acquaint ourselves with it, in order to rationally uuderstand what takes place when a plant freezes. Let us remember that water is really made up of minute solid particles, that the substance of the cell-walls (cellulose) is also composed of firm and hard molecules, probably grouped together into larger bodies termed *micellæ* but at least of considerably larger size than the hard particles of water, so that several, probably very many, of the latter may surround and lie close to each cellulose element. Between them there is strong attraction or adhesion which binds the whole into one solid mass. In the natural composition of the cell-wall the cellulose bodies may be represented by the bricks in masonary, and the water molecules by the grains of sand in the mortar. The water thus forms a real and true part of the *solid structure* and we may add an essential part of the living organism. In living plant tissues, each organic element is surrounded by molecules of water forming a layer of more or less thickness, held in the embrace of the force called adhesion. This force, like that which binds together the heavenly bodies — if indeed it is not the same thing — varies greatly with the distance. The nearest water molecules are held far more tenaciously than those more remote. This distance in any case is so short—always too little to be recognized by means of our best microscopes — that any variation makes great difference in the result. Any attraction of the water molecules by the cellulose elements must tend to prevent the movement necessary in crystallization, and adhesion may exist sufficient to postpone such crystallization until very low temperature is reached.

The temperature at which the water normally present in living plants freezes, depends upon the amount of water in correspondence with the molecular adhesion. When the water is sufficient to fill the molecular interspaces to saturation, the crystal begins to form at very little below 32° Fahr.; but when the proportion is much smaller than suffices to equalize the attraction for the water molecules, the crystalline arrangement of the latter begins at the surface of the

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organic structure only, and at a much lower temperature. If a limb is cut from a living tree, hardy in one climate, when the thermometer indicates zero Fahr. and has not been lower immediately preceding, neither bark nor wood will ordinarily be found frozen! A separated sliver is still flexible, and no ice crystals can be seen by the aid of the microscope; but a drop of water applied to the surface instantly congeals. Dip the cold stick for a moment into water and it will be found coated with ice. In the tissues of the green wood there is forty per cent. by weight of water, susceptible of evaporation, yet in the molecular embrace of the wood substance it does not freeze, at least in many cases at zero of Fahrenheit's scale, much less at 32°.

When this molecularly distributed water does freeze — in our trees in healthy condition from zero to 30° — a minute thin plate is first formed on the surface of the structure, or rather multitudes of such thin plates of regular shapes are thus formed near together. With a little further decrease of temperature, other water molecules are wrested from their attrations in the wood structure and arrange themselves beneath those first formed, and in so doing push the latter outward. This escape of some of the water molecules from among the cellulose elements, causes the latter to approach nearer each other and thus hold with stronger force the remaining water. Further molecules only join their fellows in the crystal at a still lower temperature. Thus, as the cold increases, the crystal pushes out, gaining, not in transverse diameter, but in longitudinal dimension only, just as we may conceive of the erection of a smoke-stack by successively placing bricks *under* those already laid and pushing upward the whole structure. The final length of the crystal depends upon the amount of water and the degree of cold. Sometimes frozen plants may be found coated with a dense forest of crystals each of which is a fourth of an inch or more long, but so slender that a magnifier is needed to make out individual ones, the whole presenting to the naked eye a velvety appearance. Similar ice crusts occur in the interior of tissues pushing into the cavities of large cells or into intercellular spaces.

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I turn now to another series of facts which, however familiar, must be used in our investigations. Bodies shrink in size as the temperature decreases, and expand or swell with heat. The tissues of trees form no exception to this rule. A box elder stick three and a half inches in diameter, was found to vary a fourth of an inch in circumference, between zero and 70° Fahr. A large tree must differ conspicuously in diameter under similar circumstances. But water, from 39° to 32° Fahr., *expands,* and in the act of freezing, still further increases in size. The practically resistless force of this expansion is well known. Iron pipes are split like fragile reeds; their thickness constitutes no safeguard for them; the iron itself shrinks, the water expands, bursting follows as a consequence. If we should bore a longitudinal hole in the center of a tree trunk and fill it with water, exactly the same result would follow upon a sufficient decrease of temperature. A tape line would indicate a progressive decrease in size as the temperature decreased, and relief from the enormous pressure came by a longitudinal split. In living trees we can easily see that such splitting will not occur until the temperature sinks considerably below the freezing point for pure water. The substances, like sugar, dissolved in the water of the cells, retard crystallization, and the molecular attractions offer a still greater obstacle.

I have often examined the wood and bark of hardy peremials in winter, and rarely found ice at 10° Fahr., not very frequently at zero, except in immature growths, more often at 6° to 12°, quite commonly at 15° to 20°, but sometimes not even at 28° Fahr.

It seems to me we now have sufficient explanation of the mechanical injury to trees from cold. The longitudinal, radial cracks are formed somewhat as those of a water-pipe, save that the shrinking of the wood substance rather than the expansion of the freezing water is the principal factor in the case. There is also sufficient cause known for the prevalence of the cracks on the southerly side. In the iron pipe the crack occurs in the weakest part, however little the difference may be. The outer bark on the south side of a tree is usually more deeply fissured by ex-

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posure to the sun and the expansion of growth. The south side of the tree is therefore the weaker side, and must first yield to the strain. But aside from this, more water has been proved to exist in the tissues of the south side of a tree trunk than in those of the north side, and so, according to what has been said above, ice must be first formed in the former, and must tend to cause the opening on the south side. Still another fact tends to explain the same thing. The water of the south side has proportionately less dissolved matter, probably due to the fact that there is more water with the same quantity of other material. The specific gravity of maple sap drawn from the north side of a tree is almost always greater than that taken from the south side of the same tree. It is readily understood that ice under these circumstances must first form on the south side, if the temperature is uniform.

But the separation of the concentric layers of wood, or of the bark from the wood cannot be directly due to the same causes as the radial cracks. The outer layers apparently become *too large* rather than too small, in comparison with the inner parts. It cannot be that the inner portions shrink away from the outer, if both are exposed to the same temperature, because the greater horizontal extent of the outer layers must cause a reverse tendency. It cannot be that outer layers disproportionately expand on account of ice formation, because, contrary to the first thought of some, freezing first occurs in the heart wood, and again, contrary to the supposition of many, this heart wood has full as great a proportion of water by weight as the sapwood and bark. A few experiments with a drying oven on this latter point are exceedingly instructive. The average of eight trees cut in winter gave me for the heart wood 42.17 per cent. and for the sap wood 42.11 per cent. of water, evaporated at a temperature just below that of boiling water. There were four apple trees of different varieties, three box elder and one soft maple, and were from six inches to sixteen inches in diamater.

Nothing is more certain, however, than this destructive cleavage of the bark from the wood occurs in winter rather

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than in spring and summer; it occurs at periods of intense cold. No doubt it may happen after the trees have begun to manifest something of the activities of early spring, providing that a sufficiently low temperature afterward occurs, and this doubtless need not be so low as to produce the same result in midwinter; but abundant observation has at least proved that the injury is often done in the coldest times of the season. I have seen it upon orchard apple trees much more prevalent than with any other. Throughout the northwest the disasters during recent years from this source to these trees has been ruinously great. It probably is not too much to say that the northern half of Indiana and Illinois, and throughout Iowa and Wisconsin, more apple trees have thus been injured to a serious extent than have escaped unharmed. As previously remarked, the wound is not usually seen until late spring or summer time, when the sickly appearance of the trees draws attention to it. Radial cracks are not necessarily or commonly seriously injurious, but these other frost wounds are immensely destructive.

It has no doubt already been inferred that the dense growth of ice crystals, in more or less regular layers corresponding with the annular rings of growth, is here offered as the explanation of the injury. The existence of such crystalline forests in plants before rupture occurs, cannot be gainsayed, and their existence on the freshly separated surfaces is equally certain. The force by the forming crystals is ample for the result, yet I am not aware that the act of the separation of the tissues on account of the forming ice has been actually seen. Before positively asserting that this does occur I should like to experimentally produce the result and to witness by actual eyesight the progress of the phenomenon. This has not been done. I can therefore only offer the facts as related. The results are painfully true, the explanation seems to me plausible.

Looking further now for what may be called predisposing causes, it appears quite evident that the peculiarities of summer have as much to do with the final result, as have those of winter. It is not the cold alone, but the condition of the tree as well. To have ice we must not only have the requi-

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site temperature, but water in such condition that its molecular elements may obey the crystallizing impulse. The normal sap of hardy trees in healthy, winter condition, does not furnish the latter. The water is present, but held in a molecular embrace from which it is not readily separated. The temperature may sink far below the crystallizing point for pure water without effect. The dissolved substances in the sap retard this process; but the structural relationship existing between the woody and other organic substances in molecular associations is far more effective in this way. There may be evaporated about ten per cent. by weight of water from thoroughly ripened seeds, such as those of wheat and beans, yet it is doubtful if this ever crystallizes during the coldest weather of our winters or indeed of those of the artic zone. But germinated plantlets from these seeds containing nine times this proportion of water, yield the water for crystallization at or little below 32° Fahrenheit. What we call ripeness is largely the relation of water to the other elements of structure, and in this sense the want of ripeness is the principal predisposing cause of injury to trees by cold.

If we push our inquiries still further, we may find that peculiarities of summer climate, or of soil, or of treatment tend to prevent the tree from becoming properly ripened for passing successfully the vicissitudes of winter. One of the worst things that can happen a perennial plant is to have its growth checked in midsummer by drouth or otherwise, for after this a second growth is liable to be started, and there being little or no opportunity for this latter to become thoroughly ripened, frost destroys the structure. If we will save our orchard trees from the hazards of winter, we must attend closely to their wants during the summer. They must be made to grow thrifty in the early part of the season, and must not be permitted to grow too late in the season. To accomplish this, they ought to be planted on fairly rich soil and have proper and abundant spring and early summer cultivation. Above all they must be prevented from ripening up their tissues in midsummer, through the mischievous effects of an August drouth. If the normal, vital processes of the tree are checked in midsummer by

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drouth, they are certain to start into unhealthy and abnormal activity when the autumn rains arrive, after which, the tree is more nearly in the condition for spring-time than for winter.

To avoid the disasters inaugurated by summer drouth, the first thing required of one who would have a healthy orchard is the selection of the site, and something can usually be gained in this way. We have so long advocated the highest lands for fruit trees that it is almost heresy for one to advise, under any circumstances the lower levels, but as a rule (not without exceptions), the lower locations are least liable to injurious summer drying, and wide observation, especially in Illinois, gives ample evidence that in the aggregate, the low land orchards are to-day in much better condition than those on the hills and ridges. Where this is not the case, some reason can be found in the majority of cases on this same line of less liability of injury by drouth, if other things are equal. We may look for it often in the texture or composition of the soil. A tenacious mud becomes hard and cracked upon drying, while lighter land, more porous to water, better retains its consistency and moisture under similar circumstances. Depth of soil and sub-soil also enters into the problem.

Lands which are otherwise too wet in winter and spring for orchard planting, can be adapted for it by tile draining, and no land can be made too dry by this process, so far as the soil itself is concerned. The water needed for tree growth will not run away in a tile. The roots need *moisture*, not free water.

Without discussing the soil question further, bare mention may be made that anything that debilitates or enfeebles the trees in summer, leaves them exposed to injuries by frost. Overbearing is a fruitful cause of disease. We must learn to prune correctly, to thin the crop when too great, to select varieties which inherit qualities fitting them for proper vital action at the proper season of the year, and resisting injurious influences and conditions.

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A discussion took place on this paper, participated in by Messrs. Plumb, Cotta, Arnold, Hatch, Broughton and Prof Henry. This discussion was largely directed toward the theory of the rupture of cell walls in trees by freezing. Prof. Burrill opposed the truth of this theory. He also advocated what he called "a heresy" in tree planting. That was to choose low places for apple trees. In this he was opposed by Mr. Plumb and others.

The following resolutions, introduced by A. L. Hatch, were unanimously adopted:

Resolved, That the thanks of our society are due and are hereby tendered to Hon. B. F. Adams, who has so long served us as superintendent of our exhibitions, and whom we cheerfully recognize as one of the veteran co-laborers of our society, whose long services and advanced age require that we defer to his expressed desire to be relieved from further services, and

Resolved, That he be elected an honorary member for life as a token of our esteem.

George J. Kellogg read a paper, entitled:

RAISING SEEDLING STRAWBERRIES.

By F. W. LONDON, Janesville.

Mr. President, Ladies and Gentlemen — Some thirty years ago, I concluded that the strawberry could be very much improved in size and productiveness.

By raising a large number of seedlings I believed I could sooner or later succeed in getting a large berry which would be a starting point for further improvement.

What I have learned during the past thirty years as to strawberry culture cannot be written in a short paper, but would occupy a volume. Thirty years ago there were but few persons raising seedlings.

C. M. Hovey, of Boston, had originated the "Hovey."

Wm. R. Prince, of Long Island, had a large number of varieties he had originated, some of them were very fine. Mr. McAvoy, near Cincinnati, had originated several very promising varieties.

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Of the varieties then extant I procured some sixty different ones; from these I began to raise seedlings.

My plan was to select large berries from each variety in my collection.

The first year I sowed the seed from two quarts of berries, this I continued to do for three years, at the end of five years I had about 100,000 plants in bearing. I was astonished to see the immense variety; no two plants or fruit were alike, and scarcely a family resemblance in the whole patch.

I found many very large berries with but few on a plant, and many plants bearing great quantities of medium or small sized berries.

I was not pleased with the result. Upon a careful review of the field, I found I had not made much progress, yet the yield of fruit had paid expenses.

For a few years I tried the "Wilson" as mother, crossed with "Longworth's Prolific" and "McAvoy's Superior."

Soon there began a boom in seedlings; Mr. Durand and Seth Boyden, of New Jersey, head the list. Mr. Downer, of Kentucky, originated the "Downer's Prolific" and "Charles Downing," both having been largely grown for the market.

Mr. Boyden's seedlings were all large; his "No. 30" is extra large with very fine flavor. He considered his "Green Prolific" his best berry; this last has been extensively grown for market.

Mr. E. S. Fuller originated the "Tribune" strawberry, for which the New York Tribune Company paid him three thousand dollars.

Mr. Durand has originated a large number of very fine varieties, but I have never known any of them raised for market purposes.

Mr. Parmelee, of Connecticut, originated the "Crescent" seedling, a remarkable productive one, with thrifty plant, a strain different from anything that had preceded it.

Matthew Crawford, Cuyahoga Falls, Ohio, has originated *many* very fine seedlings.

Upon the advent of the "Sharpless," we consider a new era in strawberry culture begun, a very fine, healthy plant

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producing a large berry, but non-productive, I have selected seventeen (17) berries that made a quart from this variety.

Since this large influx of new varieties began, I can date my success in raising seedlings. I have bought every new kind as soon as they were offered for sale, paying from two to three dollars per dozen, feeling at the time that nine out of every ten would prove a failure. I confess to a weakness in this respect. I rather like to be humbugged.

The object in view when I purchased the new varieties was, after having tried and learned their habits and qualities (selecting those free from rust, with size, flavor and color to suit), to mix their blood with that of my own seedlings, and avoid "breeding in and in." This to many may seem a hallucination of mine, but the large number of experiments I have constantly under way prove to me that this is not "merely a whim."

About twenty years ago I changed my method and adopted one more scientific. My aim was to produce a strawberry of large size, very productive, fine quality, beautiful color, firm and uniform in size, running large to the last picking.

The plant to produce all of the above requisites must necessarily possess a strong constitution with a clean, healthy foliage.

Mr. J. C. Plumb said to me a few years since, "You may succeed in producing a big berry, but you will fail to get the yield or quality."

I claim to have now a berry with all the above requisites, and in my simple way will try and tell how I produced it. Some blossoms *have* both sexes in *one* flower, such are usually called hermaphrodite, or perfect, having both pistil and stamens. Some varieties of strawberries have but the pistils with no stamens; such are termed pistilate (the Harvey and Crescent are instances).

The same laws that govern the animal kingdom rule in the vegetable.

In crossing varieties I use a pair of small, pointed scissors and a microscope. The manipulations are delicate and require great care. Suppose we have a strawberry, one of its

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characteristics being to produce a large berry, but lacking productiveness, if a staminate we cut with the scissors the stamens, leaving the pistil, having selected a berry that we know to be productive, we take a camel's hair brush and collect the pollen from the anthers at the top of the stamens and apply the same to the stigma at the summit of the pistil, this runs down the style to the germ; if the operation is a success the germ will soon begin to swell and produce a fruit. This fruit contains the seed which we save to produce the new varieties we are after. I am sure that plants raised from these seeds will possess the qualities of one or both of the plants, as stockmen say, " blood will tell."

After fertilizing the pistil the plant must be covered to prevent insects from bringing pollen from other flowers.

I have for the past seven years been using a more simple method with less trouble and better results.

I decide upon the varieties I desire to use as parents of the future seedlings, selecting twelve plants (two of a variety). I then sink in the ground twelve 3-inch pots filled with soil near the plants I wish to raise seedlings from. Then fasten runners to each pot. By watering a few times I have the pots well filled with roots. I then shift to 8-inch pots, by November the plants will be strong and capable of yielding twenty to thirty berries. I keep in cellar through the winter, then about the middle of March I place the plants close to each other in a hot bed, cover with sash, raise sash to air the plants as often as the weather will permit.

My object is to have the plants bloom two or three weeks before the strawberries in the field blossom; I thus escape the pollen from outside. By the time the strawberry beds are in bloom, the fruit has set on the plants in the pots. After the berries are about half grown I thin out, leaving only three to each plant. I now have thirty-six berries. I have counted the berries in a good sized strawberry and found nearly three hundred. To make sure that seed is ripe I allow the fruit to decay on the plant. I sometimes sow the seed the same season about the first of July; in such case the plants will be small by the time the ground is frozen and will not bear for two years.

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I prefer to keep the seed until the next spring, the seed will germinate without frosting. I use eight inch pots filled with clean, sharp sand, level the sand in the pot with the bottom of another, sow the seed from one berry, press the seed into the sand with the bottom of another pot, water thoroughly, with fine rose, so as to avoid washing the seed out. Sink the pot in soil in a frame, cover with sash, then shade with lath. I am careful to keep the sand in the pot damp, in twelve days the plants will appear little specks about the size of pin heads. I expect about three thousand plants, they will soon show the third leaf, this has the strawberry leaf shape. When the leaves are about the size of the thumb nail, they are are ready for the open ground.

I prepare the land the same as I would for the regular field crop. I never pet my seedlings. I turn the plants out of the pots, am careful that the roots do not get dried. I have every fibre of root so there is no danger of losing any plants.

I hoe or stir the soil about the plants every ten days. I allow one runner to each plant to root in the row, and keep all others pinched in as they appear. At the end of the season every plant will be strong and bear a full crop the next season. I cover with straw for winter protection.

To a lover of the business there is a charm or fascination that is not to be ignored.

When the time approaches for the ripening of the fruit, one is eager to know if his hopes and expectations have been realized.

I go through the rows every day with a quantity of small, sharp-pointed sticks; I find a plant that shows fruit of large size and yield, I write my conclusions on the stake and put it in the ground, as close to the fruit as possible without injuring the plant.

I repeat this inspection every day until the season for fruiting is over. I usually find about eight per cent. marked as extra promising. I cut up all plants not marked. This operation is a cruel one, nearly all being superior to the hundreds of varieties I have bought and paid from two to three dollars per dozen for.

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The plants remaining, I fertilize with well decayed manure, dig it in with hoe, and raise from ten to twenty plants from each variety. I then prepare a piece of ground long and narrow, set seven plants in a row of each variety. I give each one a name as I proceed, commencing with *one*, continuing until all the varieties are planted. I subject my seedlings to a severe test, which, when completed satisfies me as to what varieties will grow and fruit and soil in any soil or climate where the strawberry has a home.

I believe the blood in the varieties which I have originated is entirely free from the taint of rust. If I had not already made this paper too lengthy, I would give my reasons for this belief. Hoping you will pardon me for occupying so much of your time I close.

After discussion, participated in by J. C. Plumb, Prof. Burrill and others, the annual meeting was closed by adjournment.

The following communication was read by the Secretary and ordered printed in the transactions of the society:

MADISON, WIS., February 4th, 1886.

HON. J. M. SMITH,

President State Horticultural Society.

DEAR SIR—In October last, my daughters and myself each received from Prof. William Trelease, then secretary of your society, a copy of the transactions of the State Horticultural Society for the year 1885, as Prof. Trelease stated in his letter accompanying the volumes: "As a slight testimonial of the affection with which the memory of your lamented wife is cherished by the society and by its members individually."

Please convey to the State Horticultural Society the grateful acknowlments of my daughters and myself for the beautiful memorial volumes of the mother and wife, who, for a time was the secretary of your society, and always its devoted friend.

In the death of Mrs. Lewis, we well know, who daily witnessed her zeal and devotion in its behalf, even continuing when the hand of death was upon her, how great was the loss to your society, but in her home that loss is irreparable; but these kind remembrances from her friends and associates, and the knowledge that the one so dear to us, was so highly esteemed by them, has been to us a great consolation. With the highest esteem for yourself personally and for the members of the society individually.

I am very respectfully yours,

H. M. LEWIS.

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PREMIUMS AWARDED AT NEW ORLEANS EXHIBITION.

Secretary of Wisconsin State Horticultural Society, Madison, Wis., Dear Sir — On looking over the last year's report I find the list of awards made in New Orleans Exposition, not quite correct, as we have now a more full report, and perhaps nearer correct than any we will probably ever get (and is from Parker Earte, chief of the department of horticulture at the exposition), and is published in the transactions of the American Horticultural Society, 1885, as follows:

	Medals.		Value.
	Gold.	Silver.	
Best and largest collection of apples not exceeding 200 varieties, by any horticultural society, Wisconsin State Horticultural Society	1	.....	$200 00
Best collection 100 varieties, Pres. J. M. Smith for Wisconsin State Horticultural Society	.....	1	100 00
Best collection 5 varieties, Pres. J. M. Smith for Wisconsin State Horticultural Society	.....	1	15 00
Best collection 3 varieties, Pres. J. M. Smith for Wisconsin State Horticultural Society	.....	1	15 00
Best collection 50 varieties or more adapted to severe winter climate, G. P. Peffer	.....	1	100 00
Best collection 10 varieties adapted to severe winter climate, G. P. Peffer	.....	1	30 00
Best collection 5 varieties adapted to severe winter climate, Wm. A. Springer	.....	1	25 00
Best plate Alexander, G. P. Peffer	.....	.....	5 00
Best plate Blue Pearmain, J. M. Smith	.....	.....	5 00
Best plate Calvert, J. M. Smith	.....	.....	5 00
Best plate Duchess Oldenburg, J. M. Smith	.....	.....	5 00
Best plate Fameuse, G. P. Peffer	.....	.....	5 00
Best plate Herefort Skin Pearmain, J. M. Smith	.....	.....	5 00
Best plate Longfield, J. M. Smith	.....	.....	5 00
Best plate Norton's Melon, J. M. Smith	.....	.....	5 00
Best plate Marston's Red, J. M. Smith	.....	.....	5 00
Best plate Wolf River, J. M. Smith	.....	.....	5 00
Best plate Golden Russett, G. P. Peffer	.....	.....	5 00
Best plate Pewaukee, G. P. Peffer	.....	.....	5 00
Best plate St. Lawrence, G. P. Peffer	.....	.....	5 00
Best plate Tallman Sweet, G. P. Peffer	.....	.....	5 00
Best plate Walbridge, G. P. Peffer	.....	.....	5 00

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	Medals.		Value.
	Gold.	Silver.	
Best collecion of crab apples, not less than 20 varieties or more, G. P. Peffer	.....	.....	20 00
Best plate Pears (winter), G. P. Peffer	.....	.....	5 00
Best plate grapes (Salem), G. P. Peffer	.....	.....	5 00
Best plate grapes, Agawan, G. P. Peffer	.....	.....	5 00
Largest and handsomest apple, Wm. A. Springer	.....	.....	10 00
Largest New Autumn variety (Wolf River) J. M. Smith	.....	.....	10 00
	1	6	$615 00
IN DIVISION OF PLANTS AND TREES.			
All the entries made in either the Society's name or J. M. Smith, except one.			
Best collection crab trees	.....	.....	$20 00
Best collection native plums	.....	.....	25 00
Best collection fruit trees of all classes adapted to extreme northwest	.....	1	100 00
Best collection fruit trees of all classes adapted to cold climate	.....	1	100 00
Best collection Evergreens (Conifers), adapted to northern states	.....	1	100 00
Best collection Abies	.....	1	25 00
Best collection Juneperous	.....	1	25 00
Best collection White Pine	.....	.....	10 00
Best collection Thuya	.....	1	25 00
Best Thuya, one specimen	.....	.....	10 00
Best collection shrubs, 50 varieties	.....	1	50 00
Best collection North American trees not less than 100 species, G. P. Peffer	1	.....	200 00
	1	7	$700 00
Recapitulation in all	2	13	$1,315 00

Nothing however has been paid up to date although promises come monthly.

G. P. PEFFER.

MARCH 14th, 1886.

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CONTRIBUTED AND SELECTED.

GRAPE CULTURE.

By Wm. Fox, Baraboo.

PLANTING.

The ground should be well plowed and thoroughly harrowed. Plant eight or ten feet apart. In my own experience I have found that in rainy and unfavorable seasons thickly planted vines suffered much more than those which had plenty of room. I plant in rows so as to get the benefit of horse power in cultivation.

VARIETIES.

For profit I would plant black grapes, as follows: Moore's Early. I believe in this variety. It ripens evenly and well. All dealers inform me that they sell well in market. Next in order is Concord and Worden. The Worden has not borne out its reputation with me.

Of red grapes I have had good success with the Delaware and Brighton. They are both of fine quality. I also think that the Early Vicks is quite desirable.

Of forty-two kinds of new grapes in my vineyard the last year, Moore's Early and Missouri Reissling made the best growth of ripened wood.

WHITE GRAPES.

The White Lady bears well, is very healthy in leaf and wood when well rooted. Prentiss and Duchess are better quality but too late in my locality. There is no profit in any of Roger's hybrids.

PRUNING YOUNG VINES.

I cut them back until well rooted and strong. Some varieties, such as Moore's Early, Missouri Reissling, Concord and Worden, need less pruning as they are naturally strong

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rooted varieties. Early Victor, Delaware and Lady need a longer time to root.

After my vineyard was well established, I used both the spur and the renewal systems. In my younger years on the banks of the Rhine we worked on the spur system. I have found that all methods need some correction. The renewal system has given me but little satisfaction. I find that a sort of mixture or compromise of the two systems gives me the most and best fruit.

In the spring uncover vines, allow them to lie until dry and tie to stakes. I use from four to six stakes to each vine. They should be tied up very carefully so that each cam and spur will rest upon the stakes and not upon each other. This is essential on account of convenience of summer pruning and picking fruit. It will also permit the fruit to develop better in form and color and thus make it more saleable.

SUMMER PRUNING.

I use no knife, only my fingers for this purpose. I let the suckers grow and cut them back in the fall to two or three buds; pinch all the laterals away after fruit sets well; I leave one leaf behind each cluster of grapes. My aim is to raise a moderate amount of wood and crop of fruit at the same time.

Some years ago I found my Delawares dropping leaves. I bought some salt and scattered a few hands full about the roots of each vine. It worked well. I have tried it since with excellent results.

FALL PRUNING.

When the fruit is gathered and the leaves fallen, I begin without delay to do my fall pruning. I never use knife or shears without looking the vine over carefully as haste is very apt to be waste. I save healthy canes with good, firm, healthy spurs, cutting the spurs back to three buds. Of the suckers which were cut back the year before, I leave one or two if they are strong and healthy and cut the old ones with rough spurs out. On strong roots I leave four canes; on others, less; according to their capacity. When the pruning is done I cover the vines with straw and dirt.

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FARMERS' GARDEN.

Address before the Farmers' Institute in Hudson, Wis., by J. M. SMITH, Green Bay.

Mr. President, Ladies and Gentlemen—My desire upon this occasion is to give such advice to our farmer friends as will enable them to have not only a garden, but such a one as will be not only a pleasure and a comfort to the entire family, but also the most profitable acre of land upon the farm. How shall this be accomplished? First, the location. It should be near the house and the best soil is a rich sandy loam. If this is not to be had, select a heavier soil. A splendid garden may be made, and large crops grown upon a heavy clay, though it will cost more labor and they will not be quite as early as upon the lighter soil above named. Having selected a location of, say ten rods in width and twenty rods in length, let us prepare it for a season's work. In the first place it must, if it is to do anything like its best, be thoroughly drained. Under-draining in connection with good surface drains is the perfection of a preparation for large garden crops. Good surface drains must be had, even if the other is dispensed with. No water must ever be allowed to stand upon the ground in a good garden. It must be heavily manured. Let it be remembered that no land is sufficiently rich to produce first-class vegetables, fruits and flowers, without artificial fertilizing. Barnyard manures are good, and if well composted, are probably the best that can be used. Put on from twenty to thirty good 2-horse wagon loads upon the ground, and more will be a benefit, provided you have it to spare. If it is a heavy soil I should prefer to have it plowed in the fall. If not, spring plowing will answer every purpose.

In laying out the ground for planting, let the rows run lengthwise, in order that as much of the cultivation as is possible may be done with a horse and cultivator. This makes it necessary to plant the rows farther apart, and as a matter of course, the aggregate amount grown will be less than that grown under a system of what is called close

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cropping, which is often used where labor is cheap and plenty, and land worth from $500 to $1,000 or more per acre. Upon the farm the reverse is apt to be the case, hence we will take a little more land and get along with less labor. Now comes the selection of seeds, plants, etc.

This is to me, one of the most annoying and vexatious jobs of the entire season. If there are new varieties of fruits, plants, or vegetables that are of more value than the old standard varieties, I want them, and am willing to pay for them.

If we should judge solely by the circulars and catalogues that are sent out, we should almost abandon the old standard varieties at once, for the new and highly praised ones that are annually being placed before the public. I spent much time and money in trying to find something better among the new and highly praised lists of vegetables, plants, etc., and have occasionally drawn a prize; but will assure you that I have drawn an almost nameless number of blanks. I have selected a list of such as have upon the whole, given me the best satisfaction, and I believe they may be relied upon to do well in any farmer's garden, provided they are well cared for.

If you wish to set a bed of asparagus (and every farmer ought to have one), I know of none better than Conover's Colossal.

Peas — First early, Extra Early, Dan O'Rourke. Second early as well as main crop, Blis's American Wonder.

Onions — First early sets from Black seed onions. Second early and main crop, Yellow, Globe, Danvers.

Lettuce — Curled Simpson and Boston Market.

Beets — First early, the Early Egyptian. Second early and winter crop, the Blood Turnip.

Carrots — The Short Horn or Stump Rooted.

Parsnips — The Long Dutch parsnips.

Radishes — The French Breakfast and Long Scarlet Short Top, sometimes called Covent Garden.

Cabbage — First early, Jersey, Wakefield. For main crop, Premium Flat Dutch.

The above are what we call hardy, and will all of them

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stand more or less frost without being damaged. The Dan O'Rourke pea may be sown at the earliest date possible after the land is fit to work, without fear of damage. None of the wrinkled varieties will endure the same amount of cold without damage, and but few of the above named will endure more than a light frost after they have come up, without being more or less damaged.

The following list should not be planted or set in open ground until dangers from frost is about over.

Bush Beans — First early, Black Wax and Early Valentine. For late nothing is equal in quality to the Limas, but they require poles and the entire warm season to perfect their crop.

Corn — First early, the Early Minnosota. Second, Crasley's Early. Late, Stowell's Evergreen. If these three varieties are planted at the same time, they will generally come on in such succesfion as to give a supply during the entire sweet corn season.

Cucumbers — Early Frame and White Spine.

Muskmelon — White Japan and Hackensack.

Watermelon — Mountain Sweet.

Squashes — For summer, Bush Scallop. For fall, Boston Marrow. For winter, the Hubbard.

Tomatoes — The Acme and the Trophy.

Early Potatoes — Early Rose and Early Ohio. Main crop, Beauty of Hebron is excellent in quality and yields well, but with me is a little later than either of the others. Potatoes and the vegetable oyster may with propriety be placed in the hardy list, as they will only be set back somewhat but not killed by a frost.

The above named list is I believe just about what I would select for a first class family garden. For planting we shall need a good Mathews hand seed drill. When we come to cultivating we shall also need a hand cultivator. Although most of the cultivating will be done with the horse, there will be a large amount that must be done while the plants are young, and can be done much better with a hand cultivator than in any other way. Hence its necessity. I cannot in the little time allowed me, go into the details of the

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garden cultivation, and will say but a few words in this connection. Plant seeds thicker than you will need them to grow. It is very easy to destroy the surplus plants, but not always easy to fill up if they are missing.

I would recommend planting in rows lengthwise, for the reason that the ground may be cultivated more readily in long rows than in short ones. I should also recommend that the vegetables and annual crops be put together upon one side of the garden, and the fruits, such as grapes, strawberries, blackberries, raspberries, currants, etc., be put in rows upon the other side.

In this connection please allow me a few moments in regard to an asparagus bed. This is one of the most excellent of all our garden crops; and coming as it does the first one of the out-door list, I am often surprised that so few of our citizens have one.

A few words about making and caring for it. Select a deep rich soil; manure it very heavily, and plow deep. After smoothing down the bed make furrows about six or seven inches deep, and three and one-half feet apart. Get roots, of either one or two years old from the seed, and place them in the bottom of the furrows with the roots in as near their natural position as possible, and about eighteen inches apart in the rows. Fill up your furrows, level off the ground and your asparagus bed is made.

No digging pits or trenches, and filling with stones, stumps, bones, old boots and shoes, and every other conceivable thing is at all necessary. Keep down all the weeds, but cut nothing from it the first season. The next spring cut off the old tops and burn them, put on some more manure and dig it under, being careful not to interfere with the roots of the plant. This season you may cut some from it, but not long. In cutting, always be careful to cut off all the small stalks, or in other words keep the head cut entirely clean, as long as you cut it at all.

The third season you may cut a full supply. The only cultivation needed is to keep down the weeds and grass and the annual dressing of manure as above indicated. It will take the bed about five years to get to its best, and then if

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properly cared for, it will last a long time. There is one now in the garden at my early home, that is very nearly if not quite one hundred years old. Another bed in the same garden is between fifty-five and sixty years old.

I see that my allotted time will soon expire, and we will now turn for a few moments to the fruit department of the garden. First in the fruit season comes the strawberry. Here as in the seed list, we are met with a long list of highly recommended varieties, that is calculated to maks the amateur think that he has only to get a few plants, set them in the ground, and the following season go and pick a beautiful supply of fruit, not only for himself, but for all his friends and neighbors.

But here as in other departments, large crops are the result of good selections of varieties, patient care, and good, common sense in their cultivation. I am not extravagant when I tell you that I have spent in time and money within the last twenty years, over one thousand dollars, in trying to get something that would do better upon my land than the Wilson. So far I have not succeeded, unless it is with some of the new varieties that I am now testing. It is said, and I presume it is true, that they are in many places running out, and no longer retain their old strength and vitality. I can see no signs of it upon my own land and have never had, or never saw more perfect beds than my own were last fall. Hence my advice is set Wilson. If you wish to try other varieties, the Manchester has done the best of any with me, and it is the most beautiful berry in appearance that I have ever seen. A good bearer and of fair quality, but is a pistilate and needs some Wilsons or other perfect flowering varieties near them to fertilize the blossom.

To be sure of plenty of nice fruit, a new bed should be set each year. If your beds bear as I always try to make mine bear, they will about bear themselves to death the first year. Set the rows about four feet apart and the plants about twelve to fifteen inches apart in the rows. Let the plants run until they fill up and make a matted row about two feet wide, cultivated and keep the ground clean and

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cover in the fall as soon as the ground becomes frozen hard. Cover with marsh hay sufficiently to hide the plants. Uncover in the spring after the ground is done freezing, keep them clean and a crop of from thirty to fifty quarts or more is almost a certainty to the square rod.

Among the red raspberries I have found nothing that we like as well as the Cuthbert. It is a large and beautful berry, of excellent quality, continues in bearing a long time, and yields a large crop. I have dug up my Doolittle, Mammoth Cluster, and others, and am cultivating only the Gregg among the Black Caps.

Among the blackberries I doubt if there is anything better for us than the Ancient Briton. My practice is to set them in rows seven feet apart, and the plants two feet apart in the row. Late in the fall I tip the plants over and throw a little earth upon the tips to hold them down and then cover the plants with straw or marsh hay. The extra crop will pay for the extra work, even if the winter is not severe enough to destroy the plant.

I doubt whether there is, all things considered, any better currant for the farmer or the family than the old Red and White Dutch. Set them six feet apart each way. Cultivate well. Keep them trimmed to about six stalks to the plant. Use white hellebore to destroy the currant worm, and do it before they have destroyed the leaves, or you will be too late to save the crop.

Among the many varieties of grapes that are recommended, the following may, as I believe, be tried with almost certainty of success, provided they are properly cared for: Concord, Delaware, Worden, Massasoit, Lindley and Janesville. The last named is the earliest one upon the list. The vine is very hardy and is a good bearer, but the grape is not first-class in quality. The Delaware, Massasoit and the Lindley are very choice in quality, and with me are good bearers. All know the Concord. The Worden bids fair to supersede it, both in quantity and quality, beside being from a week to ten days earlier in ripening. I set them seven feet apart each way.

But my time has expired, and I will detain you but a min-

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ute longer. I know that these remarks are very crude, and fear that they will be very unsatisfactory to you. Still, if you will take them as a basis, and then work from them, supplying what is needed from your own good sense and practical knowledge of cultivation, I have no hesitation in saying that within a very few years at farthest, you will consider the land devoted to the garden, not only the most useful, but also the most profitable piece of land of its size upon the farm.

I have been careful to recommend nothing but what I firmly believe will do well in nearly every portion of our state that is at present under cultivation. Gentlemen, try a good garden. It will make your homes more comfortable, and as I really believe will add more to your wives' and childrens' happiness, than any other investment of the same amount that you can possibly make.

ADAPTATION IN HORTICULTURE.

By MRS. ALEX. A. ARNOLD.

"From the reek of the pond, the lily
Has risen in raiment white —
A spirit of airs and waters —
A form of incarnate light;
Yet except for the rooted stem
That steadies her diadem —
Except for the earth she is nourished by
Could the soul of the lily have climbed so high.

We may reason till tired, why a tree grows as it does, with branches up and roots down, or why one sort is tall and slender, and another short and spreading; why one tree bears fruit lucious to the taste, and another that which is bitter and unpleasant; why the difference in color, size and fragrance of the beautiful flowers that delight us each spring time with their happy return; while the soil furnishes similar supplies to all; without reaching any other conclusion than that their specific constitutions produce these results.

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In the Divine mandate, consider the lilies of the field how they grow! it was not expected or intended that we should be able to tell why this is so, and it can but strengthen our faith in God the Creator, to think of these things carefully and reverently, when we have upon every side such silent, but impressive witnesses of His good will.

People of the same habits, animals of equal strength and ferocity — trees bearing the same manner of fruits — and flowers of the same tints and odors, are not found in all parts of the globe; so may we not consider the question of adaptation? We who shiver when the thermometer lowers nigh to zero, could not endure the far north, but the sturdy little Esquimaux, with their clothing of skins, and plenty of fat to eat, cares naught for the bitter cold; nor would we fare very much better, should we be suddenly removed to tropical countries. The intense heat would soon sap our energy, and we fall easy victims to the malaria lying apparently in wait for those who imprudently venture within her borders. In these days of swift transportation, when we can so easily get the fruits of other climes, we need not lament that we cannot grow them all at our very doors. The person would be indeed reckless who would spend his money and time in planting trees in his own grounds that belonged to a less vigorous climate, and it is the great study of many to know just what fruit we may with any assurance of success plant here. The people who gave no heed to the climate would not be more reckless than those who should plant without considering the soil; a tree planted in our heavy black loam could but wither and die, when its nature called loudly for that which is light and airy; another planted on the upland, would prove but a poor investment, when if it had been planted by the brooklet in the meadow, where there was plenty of moisture would grow rank and strong, almost surprising you with its rapid growth. Indomitable perseverance is the price of reward in the acquisition of noble ends, we have been told, and this is especially true in regard to the cultivation of fruits and flowers. Our best cultivators will tell you of their labors, of the thorough preparation of the soil required, of the prun-

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ing, of the mulching, of the fights with insect enemies. None who have planted and have ceased their labors with the planting need expect else than failure.

Yet if we are gradually learning to do well, what in the past we have felt compelled to do quickly and superficially we may expect the rich reward. Kind nature does not tire in the service of the husbandman, if the conditions of plant growth are faithfully observed. It is well that there is a love for this work inate within us, born with our race in Paradise, else we would tire when so often our best endeavors are without satisfactory results. But we learn by testing, by trying what we can learn in no other way; we search the past for guides to the future, experience lifts its warning finger where we have suffered from indiscretions, and points us from the rocks and quicksands we may well nigh have struck upon ere wisdom was ours.

The past becomes our guiding chart, our source of practical knowledge. Thoughtful minds and skillful fingers are more necessary to success for this work, in our northern latitude, with its severe winters than in countries of more genial climes where plants flourish and bloom the year around and spring up spontaneously on either side. One of our Florida tourists has said of life there: "No sadder care of heart than to listen to the mocking-bird — no graver work to do than pick undying roses."

We may well feel disheartened at the havoc of last winter among our cherished orchards. We have learned this at least, that none but the very hardiest fruits can withstand such a climate, and we can but question whether fruit can be grown here with even a small degree of success. We have enemies in the winds and in the great extremes of heat and cold beyond our control. But to these is charged an immensity of mischief for which they are in no way to blame.

Plants thrive under an every day care and affection, rather than spasmodic zeal. Their wants must be anticipated and supplied, light, air, moisture, warmth, cleanliness, a proper amount of each; if you see plants with luxuriant

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foliage and masses of bloom, you may feel assured that their owner has learned the laws of their growth and supplied them. It sometimes seems as if there was a sort of affinity between the successful cultivator and his plants — an intuition — it lies in the line of habit, it comes of association, companionship, constant familiarity, the atmosphere of perpetual contacts from what we are so conversant, with it ceases to be observed.

The plant in our window is like the little songster in his cage, its well-doing depends upon what is brought to it, and the care it gets. There are people in the world who attribute other's success in contrast with their failure, to luck, and that it is quite a lottery and goes on in a haphazard way after all. This reminds me of the old Roman's witchcraft. Cressinus was a Roman, who had but a small piece of land to till, but he gathered so much more wealth from it than his neighbors with their many broad acres that he was accused of witchcraft. To defend himself he brought into his court, his servants and his implements of husbandry, and said: These are my witchcrafts, oh! ye Romans, my servants and my tools are all the withcraft I know of. I say not to my servants, "go do this, or do that," but I say, "come, let us go do it," and so the work goes on. This is the true kind of witchcraft to get the most return. Indifferent, careless people are not adapted to the suceessful cultivation of fruits and flowers. There is no secret, no mystery, adaptation of methods and means to circumstances, studious and timely attention to details, and the same application, industry and circumspection that leads to success in other branches of business, will have its rewards in this.

The husbandman who spends much of his time leaning upon his hoe and criticising his neighbor's work will not raise much corn of his own this year. If by invention we have increased the efficiency of our exertions, of what avail is the steam plow's marvelous power if the plowman deserts the field? It requires continued watchfulness, continued labor, energy and perseverance, and above all a love for and an interest in the work to gain the mastery. This is what we term a money age, and it is necessory to our

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happiness that we are successful financially in our chosen avocations to be content, for the necessaries of life we must have, and some of the luxuries we desire; but for all this, the difference between the one who only thinks of the dollars and cents, and the one who studies nature closely is very great. To illustrate: Two persons passing a newly sown ten-acre wheat field; one estimates the number of bushels of wheat it would yield, figures on the probable price, and calculates how many greenbacks he can deposit in the bank. The other views the myriads of beautiful emerald points, which peeped from the dark mold, calculated the number of green blades on a square foot, on a square rod, on an acre, in the whole field, a thousand million in number, each with its many thousand microscopic vessels, and all growing and developing into new forms every day; flowers, germs, swelling green seed, ripe golden grain, and all a source of scientific investigation and wonder. This is somewhat overdrawn, Oscar Wilde fashion, yet we cannot but notice the great difference in those who apparently have their eyes closed to these beauties, and thoso who have not "the eye that seeing sees not," lets them pass. The man who derives happiness from such sources as these will not willingly live in a desert. He will not surround his dwelling with mere baldness.

The shade of trees so distributed as to form a landscape of themselves, and to extend it by concealing or unfolding distant objects; the fragrance and beauty of flowers, blooming in succession through the season; a green carpet underfoot, variegated with the foliage of shrubbery, all these will delight and gratify a cultivated thinker, and afford a degree and kind of happiness in strong contrast with all that the owner of a dwelling can have whose door yard is only marked by wagon tracks in the mud, as he draws his thousand bushels of wheat across it to market.

We are apt to guage other surroundings by our own ideas of the fitness of things. One who would look with abhorance upon a nicely kept vegetable garden in the front yard by a wealthy person, would look with delight upon the same in the yard of the poor.

We would urge the cultivation of small fruits; our climate

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is more favorable to them than the larger fruits, or rather we can furnish protection that will be sufficient to withstand it. Dishes of delicious berries will delight the eye and taste, be just what your little folks need to keep them in perfect health.

Cultivate the beautiful flowers, make an attempt, those who have never tried can never realize what a pleasure there is in it. Flowers for your home, your table, your friends; flowers for wedding gifts; flowers to strew about the dead. Oh! The beautiful flowers, the more dearly loved by those who cultivate them. Mr. Colman says, "when a man asks me what is the use of shrubs and flowers, my first impulse is always to look under his hat and see the length of his ears."

Beware! fathers, when asked for money to buy a few plants and packages of seeds this spring time, of your reply.

Of a family of boys, Fred loves the law, as can be seen by his attitudes, harangues and imaginary debates, while he studies the newspapers for every congressional or political speech. Charley's love of money, skill at a bargain, and monthly deposits in the bank, his knowledge of prices and quick judgment as to quality say plainly enough that there should be one merchant in the family. Benny is such a natural architect that it would seem entirely out of place to attempt anything but mathematics or architecture; still, some of these, or their friends, talk of medicine and the pulpit, if they but follow as their tastes dictate and not a whim, success will undoubtedly follow.

We infer from this that different people are truly adapted to different pursuits in life; disappointment and failure, will be the portion of those who attempt the labors of the horticulturist, if there is no love for the work; those who *are adapted* to it should set their standard high and climb toward it. Do not attempt to fly, though that is a commoner way; it is not a common-sense way. More in harmony with the physical universe, it will then prosper and bless the work, give unerring skill, enrich with wealth and fill the body with strength, celerity and joy.

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The king of Sparta being asked what he thought most proper for boys to learn, very appropriately answered: "That which they will practice when they become men." Then give we older boys and girls the institutes — for I trust we are none of us too old to learn — give our children the agricultural college, that they may know more of the nature of the soils and crops adapted to them than we, have such a knowledge of their work that it is lifted above drudgery, and the tillers of the soil be acknowledged the equals of any in the land.

RECENT ADVANCES IN HORTICULTURAL ENTOMOLOGY.

THE ADDRESS OF PROF. C. V. RILEY, U. S. ENTOMOLOGIST. BEFORE THE AMERICAN POMOLOGICAL SOCIETY AT PHILADELPHIA.

"I have prepared no formal paper, not thinking it necessary to weary the society with a mere array of new insects injurious to fruits, although there are many that might be dwelt upon to advantage. By new insects I do not mean necessarily that the species was befere unknown, but rather such as had not previously been recognized as destructive. Many interesting instances might be given of species long known to entomologists, but previously innoxious, that had suddenly become destructive to fruits. Sometimes with a change in habits there was a slight modification in characteristics. I shall for the present, however, confine my remarks to recent advances in reference to some of the better known and more destructive fruit insects.

During the last seven or eight years I have been much engaged in the study of field insects, or those destructive to grain, and, more particularly to the cotton plant. In my earlier work, however, I gave much attention to those affecting the horticulturist, having published a good deal of original matter in reference to them in my earlier reports as State Entomologist of Missouri — matter which, I may say,

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has formed the foundation for much subsequent writing, because it was the result of original investigation.

First, then, let me allude to the Codling Moth; and, speaking of this insect reminds me that my maiden essay was upon this subject. It was read by our late member, Dr. Warder, before the Illinois State Society when one of our esteemed members now present, Mr. Earle, was president, and as a tribute to Dr. Warder's unselfish and encouraging spirit, let me say that the kind and appreciative manner in which that essay was presented by him did much to encourage me in my future work.

At that time the Codling Moth pest was thoroughly unknown in California, in which state none but fair apples were then grown. But all this has been sadly changed in the interval, the insect having spread over the whole state, and become one of the worst enemies of fruit growers. With all the activity there displayed in fighting it, and there is a state board specially appointed for the purpose, I do not find that there are in use there any new or improved methods beyond those which I recommended years ago, with the exception of the use of Paris-green. This has been strongly urged by Prof. A. J. Cook and others, and many orchardists in the west to-day use it in preference to all other insectitudes. Experience seems to indicate that it is effectual and that little danger follows its use on the early crop. But I cannot overcome a disinclination to recommend it, especially since the late Dr. Hull, while state horticulturist of Illinois, maintained that he found slaked lime dusted on the trees, was equally as effectual. I would say, however, that further exact experimentation as to the efficacy of both these substances for this particular purpose, is still needed; and in any case they can hardly be as satisfactory for the second brood as for the first. Some discussion has arisen as to whether the worm ever leaves one apple for another. I can say positively that there is no doubt of the fact that it does.

In reference to the round-headed apple-tree borer, we find that writers still speak of the eggs being laid on the trunk of the tree. This statement occurs even in Saunder's recent

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work, "Insects Injurious to Fruits," but, in reality, the eggs are always thrust into a slit under the bark and remain hidden.

As to the plum curculio, I find nothing superior to the jarring — the process recommended years ago. I place no faith in the repellant powers of strong smelling substances which we find repeatedly recommended in the agricultural press.

In regard to the raspberry and blackberry borer (Bembex marginata), I would say that contrary to the general statement and belief, the eggs are laid neither upon the canes nor ground, but upon the leaves.

The greatest advances, however, made in entomology, which are of special interest to horticulturists, are in our knowledge of plant lice — Aphides. Everybody must have noticed that many species, on tender plants as well as on fruit trees, while abundant in the early growing season, are often entirely absent during the hot summer months. It has generally been assumed that this was due to the work of natural enemies, but the recent researches of my friend J. Lichenstein, in France, have shown that some species have a migratory habit, and live during the summer on different plants. Observations which have been carried on at the department of Agriculture indicate that the common apple-tree Aphis feeds during the hot summer here on the roots of grass.

I may say also that great additions to our knowledge of the scale insect family — Coccidæ — have been made during the last few years. Professor Comstock has published much of interest in reference to the habits of many of them, and I will not stop now to discuss them further.

The chief progress, however, and that which I wish to present to the society more particularly at this time, is in improved insecticides, and particularly the improved mechanical methods of applying them. (The Professor had a force-pump and several forms of novel spraying apparatus on the stage, which the members had already been examining with much interest and which he fully described and illustrated later on in his address, to their entire satisfaction,

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at least as to the profuse spraying capabilities of the appliances).

If I were asked to enumerate the six most important substances that could be used for destroying insects above ground, I would mention, tobacco, soap, hellebore, arsenic, petroleum and pyrethrum.

The first three are well known, and it is hardly necessary for me to detain the society with any remarks in reference to their value, further than to say that it has lately been learned that the vapor of nicotine, that is, tobacco vapor, is not only very effectual in destroying insects wherever it can be confined, as in greenhouses, but that it is less injurious to delicate plants than either the smoke or the liquid. This fact will explain the efficacy of tobacco stems strewn upon the ground. As an instance of the good results attending the latter plan, I would cite the interesting experience of our friend William Saunders in dealing with the Grape-leaf Hoppers. These until two years ago baffled all his efforts; they caused his grape leaves to turn yellow and fall prematurely in the grapery at Washington. But he found that by strewing the ground under the vines with the tobacco stems which were constantly being moistened by the syringing, the leaves were preserved intact and he had no further trouble from that source.

The last three substances — arsenic, pretroleum and pyrethrum — have come into use during recent years; and I may be pardoned for saying that they were introduced mainly through my influence, having in the course of my work made many discoveries in regard to their value as insecticides. These have now also come to be so well known that it is perhaps scarcely necessary to particularize as to their application. The arsenic — London-purple, Paris-green, or other preparations — has been more extensively used than any other substance, and where it can be used safely, it is undoubtedly the most valuable of all. The value of different preparations of petroleum has also long been known, as no other substance is more destructive to insects generally. But the great trouble has been to use it with safety, because of the difficulty experienced in mixing it with water or di-

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luting it in some way. And just here our valuable new discovery comes in. If I had the proper ingredients at hand, I could readily show you what I mean, but I have not. I can, however, show you the principle, which is very simple, by which I make a permanent kerosene emulsion. I take two parts of kerosene with one of sour milk, and churn the mixture together by means of a force pump, which produces a butter-like substance that is diluted to any degree with water. This I believe to be not only one of the most in valuable insecticides, but the only one that will effectually destroy many of the worst pests which afflict the fruit grower. Mr. H. G. Hubbard, one of my assistants at Crescent City, Florida, has found such to be the case with reference to the scale insects which infest the orange trees. I may say that a permanent emulsion can also be made by substituting soap for milk, or a certain proportion of dissolved soft soap could be added to the kerosene and milk.

I gave the details in reference to the use and value of this kerosene emulsion more fully in my last annual report to the department of agriculture for 1881 and 1882, and in special bulletins issued since.

(He then read some interesting extracts on the same subject from advance sheets of his forthcoming report:)

"The value of this emulsion when applied by improved spraying machinery is not yet appreciated as it will be when it becomes better known. Recent experiments show that it can be used on almost all kinds of vegetation without injury to the plants.

In reference to pyrethrum, I find that it is most satisfactory when used for insects like the cabbage worm, and other troublesome pests of that nature. But its influence is of short duration at best, and much depends upon getting a fresh and unadulterated article.

In regard to underground insects nothing effectual has been found so far, except bisulphite of carbon and naptha-line. But I have every reason to believe that the kerosene emulsion can be successfully used here, and that it will prove to be one of the most, if not the most, satisfactory

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means of destroying the dreaded grape-vine Phylloxera. In speaking of the various insecticides before mentioned, I should have said that all six of the substances to be used above ground may be used in liquid form, and I prefer to apply them in that way. The chief points in applying any of these things, should be cheapness, forcible application, minimum quantity. To secure these ends to the best advantage, I have arranged a barrel and pump attachment which is designed to be connected with an ordinary wagon or cart, as you will find more fully described in my last annual report. I now show you a model of this apparatus, the operation of which will be readily apparent to you. A rubber hose connects the barrel with the proximal end of the rod to which one or more spraying nozzles are attached. The wagon is driven through the orchard, and while one boy pumps, a second person walks along and thrusts the nozzle into the tree, throwing a fine mist over every part of it, on the upper as well as on the lower sides of the leaves. A simple means of extending the reach may be secured by taking a bamboo rod, burning out the septa with a red hot iron and then putting a rubber tube through the hole, with a nozzle attached to the upper end. The tubes may also be made of brass and in sections with nozzles spraying in different directions, along the sides. The form of spraying nozzle which I have found most convenient not only for this purpose, but also for spraying on the under side of low, growing plants from the ground up, is what is termed in my reports the "Cyclone Nozzle." Nozzles of this sort are very small and simple in construction; but I consider them very effective. The chief characteristics of their operation are, that the liquid is forced at an oblique angle into a flattened disk so that it is made to rotate at an immense velocity and is forced out into a spray, which is easily regulated as to amount or fineness, through a central orifice on one side of the disk."

As before remarked, the members were much interested in this ingenious little nozzle, which, in itself, was little larger than a lady's thimble; and after seeing its operation, all were willing to admit its entire efficiency, and also that

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Prof. Riley had most happily and appropriately designated it in the use of the term "cyclone."

In conclusion the Prof. said: "These different devices have been perfected under my direction in the work at the Department of Agriculture, chiefly by Dr. W. S. Bairnard, one of my assistants, whose time for the past three years has been entirely given to experiment and research in this direction."

Prof. Riley was then asked by several members where these several appliances could be obtained and whether they were in the market. He replied: "They are Government property and for this reason they are not in the market. They have been invented and perfected as part of my work in the Department, and hence every one has a right to make them. Full descriptions of them have been, or will be published in the Official Reports. I may say that had they been invented by private individuals and patented they would probably before this have attracted more attentention, and been placed upon the market by private enterprise."

OUR EXPERIMENT STATION:

WHAT IT HAS DONE AND WHAT IT OUGHT TO DO FOR THE HORTICULTURAL INTERESTS OF THE STATE.

ELI MINCH, before New Jersey State Horticultural Society.

Mr. President and Gentlemen — With the best of feelings for the success of the Experiment Station, these thoughts on the work and needs of the station are presented to you. We desire to find no fault with what has been done, but a desire that more should be done in the interest of all branches of agriculture.

While the work of the analytical department perhaps is complete, yet the practical part of the work gives us but little aid in studying the complicated problems of the proper application of the fertilizers, of which the station makes so thorough and exhaustive analysis, to the practical part of

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the subject—the growth of the plant. We find the report of the analysis states that the fertilizer contains so much per cent. of potash, phosphoric acid or ammonia, and the cost of the fertilizer is so much and the value of the crude potash, phosphoric acid and the nitrogen is so much. This is apparently all well, and the reader would, perhaps, suppose the difference of any fertilizer to him would be shown by the value of the crude potash, phosphoric acid and nitrogan the fertilizer contained. Were this true, all that the intelligent agriculturist need do would be to consult the table of analysis and at once know what to purchase of the many brands of fertilizers. This is an error. No analysis of a fertilizer composed of raw or crude materials can ever be a just exponent of its value. It may give its exact chemical composition, but not its value to plant life. As sources of potash, phosphoric acid and nitrogen, the crude materials of which the fertilizer is composed, there is a vast difference in value to the proper and full development of the plant. One form of potash may be more valuable than another, so of the other constituents. The plant may easily feed on one form and not on another. Thus a fertilizer may contain a large quantity of horn shavings, another nitrate of soda, another the carbonate of ammonia as found in Peruvian guano, and all of them may show, on analysis, the same per cent. of nitrogen, and by the station's tables of analysis be of the same value to the farmer or fruit grower. Those practical farmers who have used Peruvian guano and horn shavings, or nitrate of soda, on farm crops, know this is not so. By chemical analysis the greensand marl contains the following crude materials, the value of which we give, by the station's estimated values, in the following table:

GREENSAND MARL.

	Per cent.	Value.
Potash,	7.50=150 lbs. per ton, *a* 4c,	$6 00
Phosphoric acid,	4. =80 lbs. per ton, *a* 4c,	3 20
Total value, - - - - - - -		$9 20

Which makes a ton of dry marl worth, by station value, $9.20 per ton to the farmer. The value of phosphoric acid

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is rated at ten cents per pound if soluble in water, in fine ground rock phosphate two and one-fourth cents per pound, or four times less. The practical farmer knows that the plant will thrive far better with the applicaton of the one, four times richer in phosphate, over the other.

There is a vast difference in the feeding capacities of plants. One form of potash will be more valuable to one plant than another, and hence of greater value. Buckwheat will fail to respond to the application of potash in the form of kainit, yet rye and corn thrive finely with heavy applications of it. The same is true of other plants and other forms of fertilizers. This is called the feeding capacities of plants, and has no regard to the amount of potash, soda, lime or other ingredient a fertilizer may contain, as shown by chemical analysis, but to the form in which they exist. I am aware the Station report of 1882, page 14, speaking of potash as found in the greensand marl, says: "We have no evidence that it is of any effect in growing crops and we cannot assign any price for it." I am also aware that a manufacturer, by a cheap chemical manipulation, may make it a basis of a fertilizer, so that every ounce of the potash it may have, with the common modes of analysis — the Station's value, and the value of the phosphoric acid, may be greatly increased in estimated value with little increase in real value.

The members of this society are interested in this object— the feeding value of fertilizers — as much as in their commercial value. Horticulture has need of all the light of science to understand in a thorough manner the value of fertilizers to different forms of plant growth. The horticultural interests of New Jersey are of vast magnitude. The products of her gardens feed the citizens of large cities in many states. The horticultural products of her soil are found on sale in the markets of cities that are almost within sight of the Rocky Mountains, and from their fine quality meet a ready sale.

Our soil, as all well know, which produces these products is of a sandy nature, more or less sterile, and without the use of manures will fail to respond profitably to cultivation.

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We know that fruits of varied characters and classes require for growth different fertilizers. The proper form of the fertilizer to plant growth is the problem that now agitates the horticulturist. These facts can only be found out by practical tests and trials. Some of these have been carried out by Mr. Arnold, of Vineland, with the sweet potato, and by Mr. J. B. Rogers, of Milburn, with the strawberry. Those of E. S. Carman, of the *Rural New Yorker*, on the potato tests, and others of like nature, we feel should be undertaken by the State Experiment Station. If for a special crop we need a special fertilizer, we think we ought to know it. We think if soluble phosphoric acid from bone is rated at six cents per pound, and that of the rock phospate only worth two cents per pound, we want to know it, and think the Station should test these *theoretical values* by a practical test. We have not all of us the means and time to make these trials. We feel that the State Station should undertake them. The tests made by the Connecticut Station, by Prof. Atwater, on potato fertilizers, alone yield a profit to the writer of over one thousand dollars on one crop. We should, with a Jerseyman's pride, feel prouder to accord the merit to our Station, but justice compels us to give it to another. These experiments, properly performed, pay the farmer. If combined with science, the conclusions reached from them will be correct. We feel the Experiment Station has not done its duty to the horticulturist and fruit grower. They should assume a more practical form than a mere analytical station for the analysis of fertilizers, having no regard to the effect of these on plant growth. This is unjust to the manufacturer and unjust to the consumer. We may have two fertilizers of equal commercial value, or cost, which, when applied to a certain crop one may seem to possess a value far exceeding its cost, while the other may make a showing far below. This difference may be due to the difference in the plant food in the fertilizers or in the disability of the plant to assimilate it. We want to know these crops and see the fortilizers on trial. The Station has means to make these trials; if not, then let us give the Station more support.

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It is to be desired that the Station give more attention to horticulture, and test the many fruits that are new and perhaps valuable, and by trial find the best fertilizers for them, at the least outlay of time and money. I would like to see a specimen fruit orchard, where fruits could be seen on trial. I would like to see the feeding capacities of plants tested with the best forms of crude fertilizers. I would like to see if sulphate of potash be nearly twice as valuable as the muriate of potash to plants, and if so to what plants. Experiments need to be made on the immediate effect of cross-fertilization of plants, that the fruit-grower may know whether berries are rendered better in flavor and form if planted near certain other varieties; and if so, what varieties. The effect of special fertilizers upon the reproductive parts of the plant should be tried, that varieties may, by that means, be saved from barren flowers and imperfect fruit. The germination and vitality of seeds need to be tested, and the proper depth of planting for the different kinds. New vegetables should be tested and their value given. Insecticides should be tested and those claiming to be harmless, that contain active poisons, as Paris green and London purple, should be exposed. The relative value of soluble and insoluble phosphate should be ascertained by a practical test in plant growth. The cheapest form of available nitrogen, phosphoric acid and potash for the different families of plants should also be ascertained by a practical trial.

These experiments must be all made sooner or later. Who will make them?

PLANTING A SCHOOL GROUND.

The inquiry sent me for a reply reads:

"Given a bare school ground of one square acre of sandy land, facing west, surrounded by houses, so that no good views can be obtained, please put an outline of a school building thereon, 24x36, and indicate the outhouses and plantations. The work must not be expensively done, but while

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you have in view tasteful arrangement, do not forget that our idea is to teach children a knowledge of plants about them, a love for plant growth, and a respect for beautiful things."

The first step in the solution of the above problem is the location of the school-house. Placing this at the rear of the lot will secure the greatest freedom from the noise and dust of the street, and will also offer the least temptation for the boys to annoy passers-by. Even a boy of a naturally retiring and quiet disposition may become a nuisance to the driver of a passing sleigh by being continually exposed to temptation. The walk from the street to the school-house should be as direct as possible to insure its being used. The outbuildings, if necessary, should be convenient and rendered inconspicuous by their location and the planting, so that timid children may not be deterred from using them by inclement weather or bashfulness. Where water closets can be used, their location in the building in connection with lavatories is of course the most desirable arrangement. The school-house should not be shaded, and the play-ground should not be encroached upon by the planting. The school ground should be a home for the children. A belt of evergreens, almost shutting out the street, will help to give it this character. The space in the front of the school building should be a general reception room, where boys and girls can play together. The space south of the building might be separated from the rest by a group of evergreens and shrubbery, thus forming a secluded and sunny place for the exclusive use of the girls. The boundary of planting here could jut out in places, forming little bays where groups of congenial spirits could play "house," and other games that meet with favor among the young ladies. The north side could in like manner belong especially to the boys.

A general plan having been adopted, the work can be commenced. Remember that, as the work must not be expensively done, the things planted will be small, and the effect for which we are striving will be the result of years of growth, as well as the exertions of the teacher and pupils. A great many beautiful plants may be found in the borders

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of woods and along rail fences which will bear transplanting and will only cost the labor of digging them. Virginia creeper, bitter-sweet, wild grape, virgin-bower, green brier, and other native vines could be used to cover the fences and outbuildings. Among shrubs, juneberry, witch-hazel, sassafras, red-bunched dogwood, sumach, hazel and huckleberry would be found suitable and very beautiful. A great variety of suitable deciduous trees can be found. Maples, although deserving all the praise that is given them, should not be planted to the exclusion of all other trees. Elms, lindens, tulip trees, wild cherry, black walnut and the oaks will do well. It is difficult to transplant oaks, but small trees can be moved successfully, and we should not slight these trees even if we have to raise them from acorns. Indeed, it would be interesting to raise other trees from seed. Everything mentioned thus far can be planted either in the spring or fall, but evergreens should be planted in the spring. Probably it will be difficult to find a sufficient variety of these, but young white pines, I think, could be found, and would be a great acquisition, as we have no evergreen more beautiful. There are also many native herbaceous plants that should be used in and about the groups of shrubs. How pleased we all were, when children, to find the earliest spring flowers — the hepaticas, spring beauties, trilliums, violets and adder-tongues. They are found among the trees and bushes. Why not naturalize them about the schoolhouse? Golden rod, and our numerous wild sunflowers could peep out from among the shrubs and welcome the children to the fall term. I should advise the planting of nothing but hardy plants, that will take care of themselves from year to year. Flower and foliage beds need constant attention, and are most pleasing during vacation, when they are not needed. As soon as frost comes they leave ugly bare spots.

Besides the things that can be found in the woods, it is desirable to get some things from nurserymen. If money enough cannot be obtained to buy all the evergreens and shrubs that are needed, the children might start a small nursery of their own. Many shrubs grow readily from cut-

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tings placed in the ground in a shady place, and seedling evergreens can be obtained very cheaply. More could be planted than would ultimately be needed, the surplus, as removal became necessary, being given to the pupils, who would thus be induced to make their own homes more attractive.

In planting, great care is needed to secure an abundance of roots, and to properly set out and trim whatever is planted. The assistance of some gardener or tree-planter who has had practical experience should be sought.

In arranging the plants the aim should be to secure as natural an appearance as possible. Perhaps there is a disadvantage, however, in planting our native shrubs and wild flowers. Children, and grown people too, are more apt to pick and mutilate them than to pick cultivated flowers; but if the former could be taught to control the passion which they seem to have to get hold of or destroy everything "wild," whether plant, bird or animal, it would be a most valuable lesson.

The lawns should be kept in as perfect a condition as posposible, without restricting the children in their play.

A good practical solution of the above problem would have a moral and civilizing influence, and would add greatly to the enjoyment of life, by teaching how to appreciate the common things around us.—*O. C. Simmons, in Michigan Horticulturist.*

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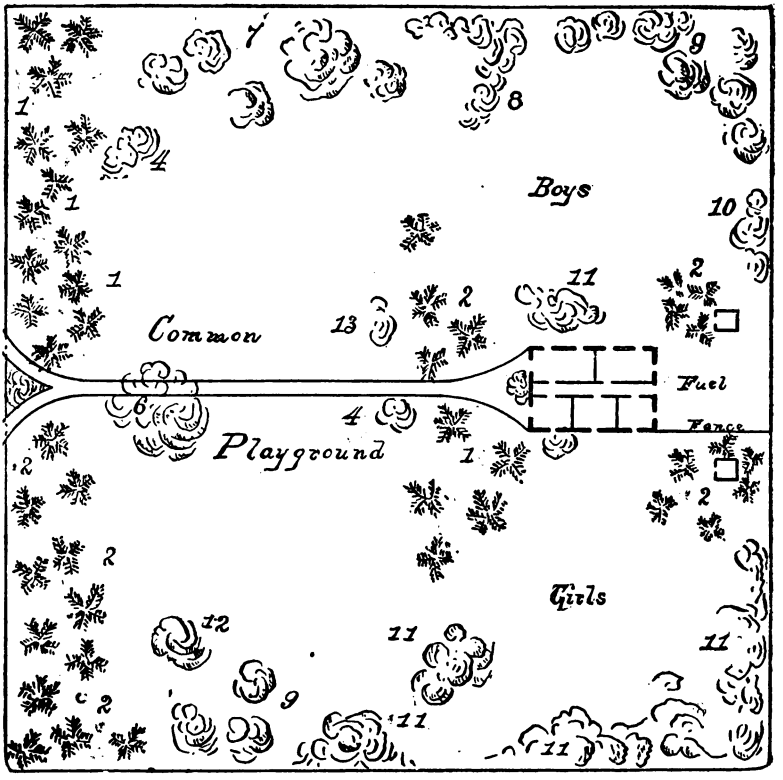

RURAL SCHOOL GROUNDS.*

1. Groups of pines.
2. Groups of spruces, including hemlocks and a few specimen trees of Colorado blue spruce.
3. Group of upright honeysuckles.
4. Groups of red-branched dogwood.
5. Cut-leaved weeping birch.
6. American elm.
7. Maples.
8. Sassafras.
9. Deciduous trees.
10. Hazel bushes.
11. Groups of shrubbery. Use Juneberry and flowering dogwood next to fence and in centers of groups.
12. Witch hazel.
13. Purple leaved plum next to evergreens, golden syringa in front. Plant evergreens closer together at first, and afterwards thin them out.

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FRUIT STATISTICS OF WISCONSIN CENSUS REPORT OF 1885.

COUNTIES.	Apples.		Grapes.		Berries.		
	Bushels.	Value.	Pounds.	Value.	Acres.	Bush.	Value.
Adams	3,262	$1,164 00	70	$4 00	7	209	$569 00
Ashland							
Barron	174	160 00	20	3 00	¼	5	15 00
Bayfield							
Brown	10,760	5,319 00	6,765	549 00	7	644	1,884 00
Buffalo	2,217	1,621 00	39,330	2,356 00	14	625	1,575 00
Burnett	181	156 00	40	2 00	7	50	116 00
Calumet	20,779	9,924 00	1,725	148 00	3	225	845 00
Chippewa	989	954 50	20	2 00	19	427	1,690 00
Clark	1,823	1,395 00	195	19 50	1	15	55 00
Columbia	50,930	19,237 60	11,247	741 00	32	882	2,240 60
Crawford	29,890	10,651 00	5,307	502 50	1	18	39 00
Dane	57,759	23,928 25	23,347	1,601 50	37	1,916	6,321 00
Dodge	77,019	22,142 30	9,780	731 50	16	651	1,894 00
Door	4,020½	2,532 95	205	59 00	1	48	147 00
Douglas*							
Dunn	2,283	1,452 00	70	9 00	15	270	974 00
Eau Claire	2,280	1,198 20	20	1 00	5	258	875 00
Florence							
Fond du Lac	103,262	40,242 00	14,937	1,044 00	37	3,218	7,655 50
Forest						2	12 80
Grant	51,203	20,754 40	204,266	6,425 80	18	606	1,633 50
Green	29,240	10,950 50	13,306	1,054 00	11	569	1,753 00
Green Lake	44,768	13,928 25	5,110	388 00	28	945	2,609 50
Iowa	27,377	11,245 00	9,747	474 00	2	60	235 00
Jackson	3,828	1,757 75	150	15 00	?1,115	844	1,682 00
Jefferson	48,217	18,106 00	38,559	2,571 00	87	1,610	5,233 00
Juneau	7,536	5,437 50	3,700	335 00	165	2,365	4,582 00
Kenosha	88,289	23,344 00	1,240	70 00	616	2,970	4,521 00
Kewaunee	4,354¾	2,044 75	450	40 00			
La Crosse	8,458	5,222 00	17,330	1,103 00	31	1,532	4,115 00
La Fayette	14,868	6,914 00	2,765	206 00	12	473	1,730 00
Langlade	7	7 00			1	32	118 00
Lincoln	227	193 00					
Manitowoc	22,430	11,446 48	501½	53 00	2	40	143 00
Marathon	1,341	942 50			1	12	90 00
Marinette	1,630	1,737 00	280	32 75	302	3,101	10,352 00
Marquette	6,952	3,334 00	550	59 00	62	400	894 50
Milwaukee	77,866	33,468 00	5,130	261 00	22	2,425	6,951 00
Monroe	8,112	5,292 50	2,725	159 00	48	1,853	2,806 00
Oconto	3,965	2,883 75	77	13 50	1	84	192 80
Outagamie	20,780	11,801 00	2,585	180 90	7	247	768 00
Ozaukee	59,283	23,917 80	9,274	1,247 40		5	5 00
Pepin	1,217	752 50	80	8 00	1	108	336 00
Pierce	5,489	2,711 50	845	101 00	4	223	636 00
Polk	524	480 00	131	10 10	2	67	282 00
Portage	1,671	950 50			18	701	1,674 00
Price							
Racine	96,603	27,870 00	2,030	196 00	41	3,884	10,120 00
Richland	18,856	9,743 00	9,220	492 00	6	299	884 00
Rock	98,173	35,214 06	5,143	409 40	75	2,456	6,232 00
St. Croix	2,034	1,166 50	132	11 00	11	293	1,000 80
Sauk	40,058	16,937 80	21,589½	1,476 30	36	1,480	3,908 00
Sawyer							
Shawano	2,810	1,874 00	540	32 00	2	408	?157 00
Sheboygan	115,752	40,579 31	2,406	152 00	8	323	933 00
Taylor					82	700	1,600 00
Trempealeau	3,170	1,953 00	500	75 00	6	232	707 00
Vernon	27,840	13,580 00	5,220	318 00	6	397	848 50
Walworth	97,322	26,590 50	10,477	566 10	22	1,115	3,508 00
Washburn							
Washington	102,167	34,290 00	5,504	248 00	3	?700	194 00
Waukesha	72,935	26,867 08	4,121	826 00	43	2,179	6,013 00
Waupaca	10,840½	6,145 25	1,939	202 25	14	875	2,071 00
Waushara	12,078	5,620 20	1,195	66 50	323	7,766	23,154 40
Winnebago	61,879	27,847 00	40,424	2,311 00	92	4,092	11,781 00
Wood	772	736 75	15	1 50	2,870	12,978	26,008 00
Total	1,670,845¾	$633,565 80	541,735	$29,961 50	6,428	70,768	$179,464 40

* No returns. ? Error in enumerators returns.

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